

# **Modernization Partner Program Plan**

## **SFA Modernization Program**

*U.S. Department of Education*

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### Modernization Partner Program Plan

#### 1.0 Program and Project Policies and Standards - Introduction

The SFA Modernization Program at the US Department of Education sets out to accomplish the objectives of the Performance Based Organization: increase customer satisfaction, decrease unit costs, and improve employee satisfaction. The Modernization program will accomplish these objectives through reengineering business and technical processes, business and technical architecture, utilizing best in business practices and commercial off the shelf software where appropriate to align with the performance objectives of the PBO.

The SFA Modernization Program requires a support structure to provide the oversight and reporting of Modernization activities to the SFA executive team and stakeholders so the right decisions can be made to achieve performance objectives. This program structure, the Program Management function, will maintain focus on the overall business objectives of the program, while providing the continuous guidance needed to support the delivery of SFA's targeted business capabilities. The structure will also support strong interaction and involvement with SFA's decision making executives, including the COO, CIO, CFO, Channel General Managers, and Directors to provide information regarding the planned and proposed activities, recommendations and impacts of decisions.

The outcome of establishing the Program Management function will be the management oversight for the Modernization Partner to work with the SFA management team to set direction, make project decisions and measure the results of the Modernization program against SFA performance objectives.

The Program Management function to support the Modernization Program is focused in the following three areas:

- 1) The Program Management Office (PMO) that directs the effort to achieve the defined outcome-oriented, performance-based objectives;
- 2) The Enterprise Engineering and Integration (EET) work that oversees the architecture to enable innovative technology practices in a disciplined and value producing manner; and
- 3) The Partner Management work that enables all performance delivery team members to meet their responsibilities in the joint enterprise.

The key document which outlines the activities, policies, and procedures for the program is the Modernization Partner Program Plan. The Program Plan is focused on the operation of the PMO, but recognizes that effective program management involves the combination of the PMO, EET, and Partner Management teams. The Program Plan also uses as inputs the work previously completed in Task Order One: The Concept of

Business Operations, Critical Program Management Processes, and the Contracts Management Plan. Another key component to the Program Plan is the Configuration Management Plan, which is being developed simultaneously with this plan and will provide the technical oversight necessary for integrated delivery of business capabilities.

### **1.1 Comprehensive Program Management Activities**

The Program Management Office will focus on the overall business goals of the program, while providing the continuous guidance and comprehensive program management activities needed to support the delivery of SFA's targeted business capabilities. The PMO will provide oversight and planning of all Modernization projects and initiatives. The PMO will also provide consolidated measurement and performance of the SFA Modernization Program in the areas of:

- Cost
- Schedule
- Architecture
- Quality
- Risk
- Communications
- Resources
- Use of commercial off the shelf software
- Realization of Benefits

Other key measurements include: unit cost, customer satisfaction, and employee moral. The measurements will be covered in Section Five - Performance Management.

#### **1.1.1 Oversight**

The Program Management Office will act as an oversight function for the Modernization Program. The PMO will establish and implement the policies, procedures and management processes necessary to effectively manage the program. This will lead to increased quality of projects, understanding of the relationship between projects and the expectations of benefits that should be achieved out of projects.

#### **1.1.2 Planning**

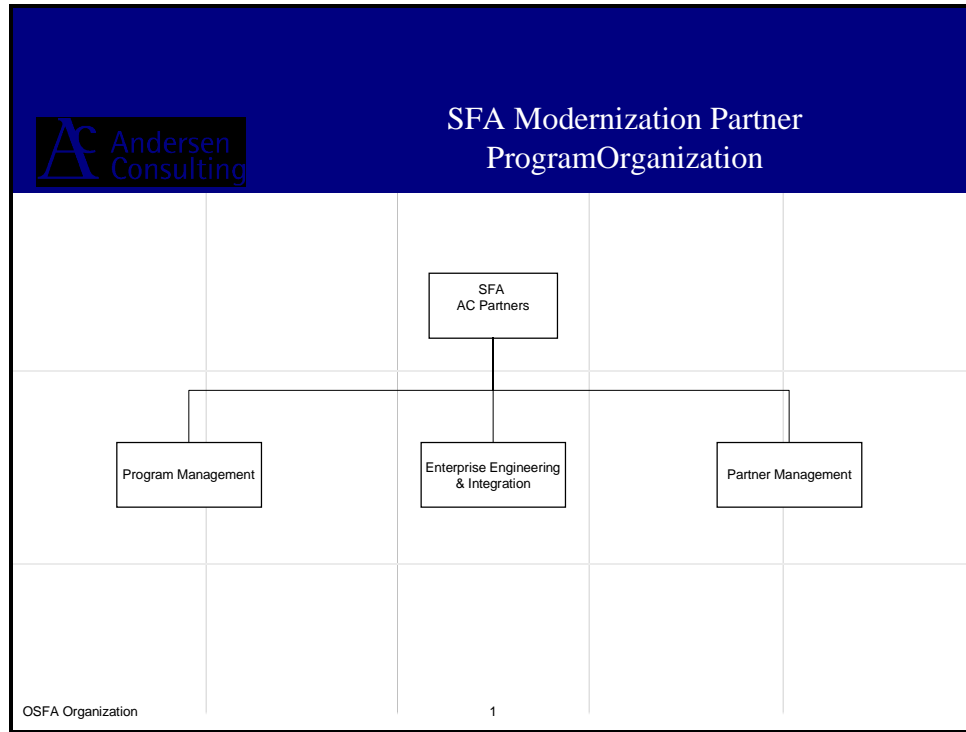
The Program Management Office is also responsible for planning of the program initiatives. Using the Modernization Blueprint sequencing plan and current investment initiatives before the investment review board, the Program Management Office will work closely with the SFA to develop an approach for delivery of reengineered systems and processes to achieve the business objectives of the SFA. The Program Management Office and Partner Management will work closely with SFA business areas to develop statements

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of work and task orders aimed at the acquisition of resources to achieve the business objectives.

### 1.1.3 Organization



The Program Management Office will focus on the overall business goals of the program, while providing the continuous guidance and comprehensive program management activities needed to support the delivery of SFA's targeted business capabilities. The PMO is structured so that team members will be able to efficiently and effectively execute the Modernization Program. The following functions and processes will be implemented to establish operations for the PMO:

- Comprehensive program management activities will be performed to provide SFA with a reporting view of the status and measurable results of projects of the Modernization Program
- Key measurements\*
  - Cost
  - Schedule
  - Architecture
  - Quality
  - Risk
  - Communications
  - Resources
  - Use of commercial of the self software
  - Benefits



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- Regular reporting to the PMO and SFA
- Quality
- Communications
- Investment Management
- Performance
- SFA support

\* Other key measurements include: unit cost, customer satisfaction, and employee moral. The measurements will be covered in Section Five - Performance Management.

The Modernization Enterprise Engineering and Integration Team (EET) will provide the necessary technical oversight to confirm that the Modernization Blueprint and the supporting information systems operate in a standards-based environment. The team will focus on the following areas:

- Modernization Blueprint
- Configuration Management
- Critical Methods and Standards
- Systems Integration and Test
- Deployment
- Post-Deployment Maintenance

The Partner Management activity provides the support structures and organization necessary to administer the Modernization program. The key to this activity will be working closely with the SFA and existing legacy contractors. This activity will focus on three areas:

- Developing and implementing the Modernization Acquisition Strategy
- Transitioning the legacy contractors into a partnering relationship
- Managing and administering the Modernization Partner contract.

Organization charts providing another level of detail are included in Appendix 1A.

### **1.1.3.1 New Initiatives/Projects**

Through the progression of the SFA Modernization Partner Program, a number of “new” initiatives/projects will surface. These projects will branch off of the original efforts of the Modernization Partner. These projects may be performed by Andersen Consulting and/or legacy contractor or a combination of both. As these projects start-up they will be managed by the PMO, EBIT, and Partner Management. Examples of these new projects are the Financial Aid Origination Project (FAO) and Financial Management Systems (FMS) Design project. These projects will be required to adhere to the policies, processes, and procedures laid out in the program plan.

### **1.1.4 Operating Processes and Standards**

The Operating Processes and Standards section provides the procedures, standards, and guidelines that specify the requirements and recommended approaches for performing project activities.

#### **1.1.4.1 Critical Program Processes**

Six key management processes were identified in a previous deliverable entitled Critical Program Management Processes: Communication, Configuration, Investment, Issue, Quality, and Reporting Management. The Operating Processes and Standards will focus on Configuration and Risk Management. Detailed program plans for the remaining processes will be included in the latter part of this deliverable.

#### **1.1.4.2 Configuration Management Plan**

The Configuration Management process is designed to ensure that changes to the SFA environment align with both SFA strategies and business objectives, meet Modernization Blueprint and existing requirements, are coordinated, controlled and integrated to deliver real tangible business capabilities, and conform to existing architecture and/or planned architecture enhancements.

The Configuration Management Process involves eight key steps:

- 1) Identify and Request Change: All Change Identification and Requests are made in accordance with the business requirements of the Modernization Blueprint. Change Requests are submitted using the Change Request form. This form should be completely filled out and given to the Change Control coordinator for entry into the Change Management Tool.

- 2) Assess Change Request: Change requests are evaluated by a change control coordinator who determines the impact of the proposed change to the SFA environment. The change control coordinator reviews the change request (applying previously agreed criteria) at weekly configuration management team status meeting and logs assessment.
- 3) Develop Response: Change requests initiator provides a clear change plan which should include a contingency and back-out plan.
- 4) Assess Quality: In assessing quality, the Change Control Board reviews change requests against IRB requirements and Enterprise Architecture standards and methodologies. The Change Control Board ensures that changes are prioritized, coordinated, controlled and integrated within the program quality framework and result in real, tangible benefits
- 5) Determine Release: The Modernization Partner, QA and Configuration Management teams audit the releases, record deficiencies and report corrective actions.
- 6) Assess Release Readiness: Release Readiness is the process by which the product development organization, Configuration Management Team, QA and COTR determine the readiness of a product for general distribution.
- 7) Implement Change: Upon release readiness approval, the product is transitioned to the deployment team. According to the release plan, the deployment team confirms the schedules (shipment software/hardware), training dates & personnel to attend (if required). Changes are implemented by SFA Deployment team and verified by the Configuration Management team with strict adherence to the Modernization Blueprint .
- 8) Update Blueprint: The Modernization Blueprint will be updated to reflect the outcome of the process

A more detailed Configuration Management Process Plan developed by the EEIT team serve as an attachment to this deliverable.

### 1.1.4.3 Risk Management

#### A. Risk Management Objectives

The objective of Risk Management involves the identification, mitigation, oversight, and reporting of program risks---that is, potential problems that have yet to occur. Establishing a risk management plan helps to identify, quantify, and define an approach for controlling individual program risks. The overall goal is to progressively reduce the program's exposure to events that may threaten its success in accomplishing goals.

### B. Risk Management Roles and Responsibilities

Overall scope and direction of Risk Management is set by the Modernization Partner. They are responsible for ensuring that risks are appraised in a continuous process, throughout the development life-cycle.

Overall Program - overall program risk management will be carried out by the PMO. General responsibilities are:

- Overall Direction: Program Director and Program Sponsor
- Plan Development and Execution: Issue Manager/Program Manager
- Counsel and assistance regarding risk identification, assessment, analysis, and handling: All members of PMO.

Individual Projects - Each project will conduct risk management activities addressing those risks that are pertinent. These activities will be the responsibility of the assigned Project Manager, assisted by other members of the project team as appropriate. The following is an overview the Program and Project Risk Management Roles and Responsibilities:

<u>Overall Program</u>	<u>Individual Project</u>
<ul style="list-style-type: none"><li>• Develop and maintain Program Risk Management Plan</li></ul>	<ul style="list-style-type: none"><li>• Develop and maintain Project Risk Mitigation Plan</li></ul>
<ul style="list-style-type: none"><li>• Identify overall program risks</li></ul>	<ul style="list-style-type: none"><li>• Identify:<ul style="list-style-type: none"><li>- Program risks applicable to the project</li><li>- Additional project risks</li></ul></li></ul>
<ul style="list-style-type: none"><li>• Assess and analyze risks</li></ul>	<ul style="list-style-type: none"><li>• Assess and analyze risks</li></ul>
<ul style="list-style-type: none"><li>• Incorporate risk mitigation/avoidance approaches into the Program Plan</li></ul>	<ul style="list-style-type: none"><li>• Incorporate risk mitigation/avoidance approaches into the Project Plan</li></ul>
<ul style="list-style-type: none"><li>• Develop contingent risk responses</li></ul>	<ul style="list-style-type: none"><li>• Develop contingent risk responses</li></ul>
<ul style="list-style-type: none"><li>• Monitor and identify risk occurrence</li></ul>	<ul style="list-style-type: none"><li>• Monitor and identify risk occurrence</li></ul>
<ul style="list-style-type: none"><li>• Implement risk response actions based on risk occurrence</li></ul>	<ul style="list-style-type: none"><li>• Implement risk response actions based on risk occurrence</li></ul>

- Document and report risks and risk reduction via:
  - Program Risk Watch List
  - Program Risk Profile
- Document and report risks via a Project Risk Watch List

### C. Risk Management Process

The risk management process is an iterative cycle which is performed initially during Program Planning and thereafter following newly identified risks. These new risks may arise from a variety of sources

- New risks previously missed or unforeseen;
- New risks arising from an approved change request, where cost, schedule, or scope may be amended, impacting the critical path;
- New risks arising from major issues progressed from the Team/Project levels;
- Further risks arising from current risks whose response requires investigation; and
- Further risks arising from the 'outcome' or consequence of a separate risk occurrence.

The Modernization Program will use the following five sequential phases for Risk management:

- 1) Planning: Concerned with focusing attention on Project risks, and identifying and documenting the major risks which may impact progress.
- 2) Assessment: Risks are documented into characteristic categories (e.g. technical, operational, etc), and are quantified on a numerical scale according to likelihood, impact, and level of control.
- 3) Analysis: Appropriate responses are developed to minimize the 'realization' of each risk, and are documented according to characteristic actions (e.g. avoidance, acceptance, transfer, etc).
- 4) Management: Risk management across the Program and Project levels permit the ongoing evaluation, aggregation, and status reporting of risks to reduce the overall risk exposure.
- 5) Reporting: To provide visibility of risks and progress in mitigating them the reports will be provided on a regular basis

*The following sections discuss each of these phases in more detail.*

### C.1 Risk Planning

#### Focus on Risks

Focusing attention on the value in determining risks facing each area of concern, and ensuring that risk planning is not perceived solely as an administrative exercise, is a process driven by the Program Management.

Initially, focusing management attention on Area level risks is assisted by reviewing the following information sources for direction:

- Risk and Constraints from Journey Management;
- Project Area Descriptions and deliverable definitions;
- Existing Project documentation, or documentation employed from other Programs;
- Knowledge transfer from functional/technical experts with experience in similar Programs, application software, or technology platforms; and
- Reviewing previously identified risks from similar development Programs.

Typically, the production of a 'baseline' of the areas where initial risks are likely to be identified is useful for developing and refining the risk and its response further.

#### Documentation of Risks

The risks identified by Program and Project Managers are documented into specifically defined, tangible risk items, for which a response/action may be well-defined and be measurable. This ensures that all analyses and reporting of risks maintain a deliverable-focus, for which progress towards high level objectives can be compared.

Identifying vague or non-specific risks results in responses/actions which are ambiguous, intangible, unclearly defined, and difficult to implement adequately.

Additionally, it is important not to attempt to document all possible risks and outcomes, as this can often introduce improbable scenarios, which:

- Create unnecessary concern and confusion;
- Shift the focus away from the 'real' or probable risks;
- 'Dilute' the pool of risks, leading to diminishing returns on effort; and
- Reduce credibility for the risk management process.

Risk documentation is more concerned with identifying the areas where the consequences of the risk are most severe, and where corrective responses or actions will produce the largest benefits in risk reduction.

Furthermore, risk documentation takes the areas, identified during focusing, where risks are most likely to occur and develops detailed assessment criteria from which specific risks are documented.

Typical sources of assessment criteria are shown below (these are further categorized in section “Risk Assessment”):

- Unrealistic budget or schedule estimates;
- Delivery on critical path, or unrealistic deliverable and milestone deadlines;
- New technologies and platforms, complex/leading edge technologies, and complex environments;
- Functionally complex data models, including processing functionality;
- Staffing considerations for experts, numbers, and experience required; and
- External dependencies, including legislative changes, contractor supply and delivery, procurement, etc.

### C.2 Risk Assessment

#### *Categorization of Risks*

The Modernization Partner will utilize five characteristic sources of risks in defining risk categorization: cost, schedule, technical, operational, and external context. These describe the generic areas where specific risks are likely to occur, and formalize the categorization initially performed during risk planning.

Cost-based risks outline the non-achievement of the financial benefits of the Program detailed in the Program Objectives or Key Success Factors. Typical cost risks include external contractor overspend, additional costs in changing/solving design, application program, or operational problems

Schedule-based risks focus on the non-achievement of the Program's products or benefits within the specified time-frame. Typical schedule-based risks arise from extensions from scope changes, resource unavailability, market opportunities missed, and additional schedule extensions from solving those risks outlined in 'Cost' above.

Technology-based risks consider the non-achievement of the application specifications and benefits expected. Typical risks include new/non-standard platform technology, integration problems with existing other systems, migration problems, performance expectations not achieved, environment complexity and functionality, and system operability.

Operational-based risks focus on the peripheral organizational and business operational re-engineering changes, arising from the systems development. Typical risks consider both the transitional and the long-term effects of the system's introduction, including the organizational and behavioral change required, the human and physical resource planning, and communication required to facilitate a smooth transition to the new structure.

External-based risks consider the 'environmental' factors largely outside of the control of the Program Management, which can directly/indirectly affect the successful delivery of the Program. Typically, risks arising from legislative regulations, legal requirements, communication to the market, lack of market sophistication, and the strategic direction and priority conflicts of a controlling body, are profiled under this category.

The Cost and Schedule risk sources are known as the risk 'indicators', as they are often the most tangible measure of overall progress towards Program objectives or goals. The Technological, Operational, and External risk sources are referred to as risk 'drivers', as these are the sources of all Program risks, which additionally drive the Cost and Schedule risks.

The recognition that the management of the sources of Technological, Operational, and External risk is inter-related to the management of Cost and Schedule risks is an important link in effectively responding and reporting risk-reducing activities.

### Assessment of Risk Responses

Following specific definitions of the risks above, the most likely overall response to the risk should be decided. This may be an obvious set of actions which annul or limit the risk occurring, or alternatively may be an intuitive 'best guess' of the available actions which are likely to be effective.

The development of specific and discrete responses to each risk are analyzed further in section "Risk Analysis". However, initial 'reactions' to each risk are required to allow quantification of each risk, as described in section "Quantification of Risks" below.

### Quantification of Risks

Risk quantification extends the value of the understanding, documenting and reporting on Program and Project level risks, by attempting to assign each risk to a numerical scale. See section "Risk Calculation and Examples."



This introduces a common format to risk quantification, based on easily understood numerical scales. These assist in realizing and focusing on the 'true' impact of each risk, and in the prioritization of the risk-reducing activities and responses identified.

The following three parameters for each risk are quantified:

**Impact:** This is an estimate of the overall scale of the impact following an occurrence of each risk. This is rated on the following scale:

- 6 *Critical impact*; threatens success of the Program
- 5 *Extreme impact*; significant disruption to successful delivery of Program objectives, products, and benefits
- 4 *High impact*; significant disruption to Program schedule, cost, and products over the medium and long terms
- 3 *Medium impact*; progress disrupted with large extensions to schedule and cost, across short and medium terms
- 2 *Moderate impact*; progress disrupted with manageable extensions to short-term schedule and cost
- 1 *Marginal impact*; exposure slight

**Probability:** This is an assessment of the probability of an occurrence of the risk, given the responses identified, and the other factors or risks on which it is dependant. This is rated on the following scale:

- 6 *Extremely likely* occurrence
- 5 *Very probable* occurrence
- 4 *Probable* occurrence
- 3 *Possible* occurrence
- 2 *Unlikely* occurrence
- 1 *Highly improbable* occurrence

**Level of Control:** This indicates the relative control which can be exerted on the probability of the risk occurring. Moreover, Level of Control attempts to introduce a 'modifier' which quantifies the level of control which can be exerted over implementing that response. For example, the implementation of a risk response may need to be performed by an external contractor or body, and is outside of the direct control of the management team. This is a risk in itself, and is rated as follows:

- 6 *Total* direct control
- 5 *Extensive* direct control
- 4 *Moderate* 'hands-on' control
- 3 *Shared* or partnered control
- 2 *Minimal* realistic control
- 1 *No* control

Risk quantification extends the value of the understanding, documenting and reporting on Program and Project level risks, by attempting to assign each risk to a numerical scale. This method assists in realizing and focusing on the 'true' impact of each risk, and in the prioritization of the risk-reducing activities and responses identified. The three parameters for risk quantification are: impact, probability, and level of control.

### C.3 Risk Analysis

Risk analysis forms the final step in the identification, development, categorization, and quantification cycle. It is primarily concerned with developing specific, discrete, and measurable responses to each risk.

This is not necessarily limited to the development of only one response per risk; two or more alternative responses may be defined, if the response to that risk is contingent on the outcome of a prior event.

Additionally, the combination of two or more interdependent risks is evaluated. The quantification or summation of individual risks which are linked may produce a different combined result to the individual totals, and should be recognized by area management during the quantification process.

### Analysis of Risk Responses

The initial steps in the risk analysis process consider the analysis of detailed risk responses to those risks which:

- May occur soonest in the development lifecycle, irrespective of probability; and
- Are high impact, low level of control.

This is intended to cover any short-term exposure first, before considering overall Program risk reduction.

Overall, Program risk response analysis covers five characteristic responses, shown overleaf:

Avoidance-based responses are employed at any point in the development lifecycle where future planning work is performed. Typically, most risk avoidance occurs during the project definition and planning phases of a Program, where objectives, scope, key success factors, work breakdown, and Program outputs or deliverables are defined. An example of risk avoidance is the use of a stable, established technical solution in preference to an untried, or complex new technology. However, risk avoidance solutions may limit the ability to achieve high-level Program objectives, by unnecessarily constraining a desirable solution.

Mitigation-based responses occur at all points throughout the development lifecycle, and are typically the most common response. They identify an action or product that becomes part of the project plans, and which are monitored and reported as part of the regular performance analysis and progress reporting of the Program.

Acceptance responses describe factors that may directly affect the success of the Program, but are outside of the sphere of influence of the Program Management, and can therefore only be 'accepted'. In addition, acceptance of risks as a response may be based on the cost-ineffectiveness of any available response or solution. An example: acceptance response could be created from a legislative or legal risk, over which no control could be leveraged.

Investigation-based responses do not define any mitigation for reducing an individual risk. They are responses to risks where no clear solution is identified, and further research is required. However, investigative responses should not be ignored, as they immediately and directly lead to a greater aggregated Program risk. This is because the probability quantifier for each risk includes the effect of the applied response, for which there is none, and the level of control quantifier indicates the level of influence to apply that response, which is low.

### C.4 Risk Management

Risk management involves maintaining a list of identified risks and identifying and recording potential actions that could be taken to avoid or mitigate the risks. The Modernization Partner will work with the PMO to identify actions which should be immediately incorporated into the program or project plans to partially reduce the risk, as well as actions which should be treated as contingent risk responses. Additionally, identification of risk mitigation owners and assignment of a target date for 50% reduction of likelihood or impact for each risk will be identified. The end-result of this step in the process is the development of the Project Risk Mitigation Plan as well as a Program Risk Management Plan. Both of these will be monitored using Risk Watch Lists (discussed below).

### C.5 Risk Reporting

Program level risks will be initially identified as part of the Program Risk Management Plan. Project level risks will initially be identified as part of the Project Risk Mitigation Plan. To provide visibility of risks and progress in mitigating them, the Modernization Partner will provide the following reports on a regular basis:

Project Risk Watch List: Project level; Tracks the status of risks and avoidance/mitigation actions. This will facilitate monitoring risks and initiating risk responses.

Program Risk Watch List: Program level; Tracks the status of Risks and avoidance/mitigation actions.

Risk Profile: Program level (optional for projects); Displays planned, actual and projected progress in reducing risks.

A Risk Watch List summarizes the results of the previous risk management process steps. Monitor risk status and maintain the risk mitigation plan and risk watch list as appropriate. A sample of the Program Risk Watch List is included in Appendix 1B.

A Risk Profile graphically portrays the program's, or project's exposure to risk. It shows the planned projected (if different from the plan) and actual risk reduction achieved as the program or project progresses. A sample of the Program Risk Watch List is included in Appendix 1C.

## 1.2 Project Management Requirements and Standards

The Program Management Requirements and Standards serves as a guideline for defining, measuring, and monitoring commitment of all Modernization team members to the success of the SFA Modernization Partner Project. Comprehensive program management activities will be performed to provide the SFA with a reporting view of the status and measurable results of projects of the Modernization Program.

### 1.2.1 Project Workplans

A Project Workplan sets out the major work processes and component units of work that will be used to accomplish the project. The major work processes, along with the cost accounts, provide the basis for determining the workplans, which are the detailed plans against which progress and performance will be measured. Individual projects will be required to complete a detailed project work plan using a project management tool (i.e., MS Project 98, Primavera, ABT project work bench).

### 1.2.2 Inputs

A number of program management activities will be used as inputs for measuring the status and results of projects. Examples of these inputs are status reports and time reporting documents.. The project status report is a narrative report of overall project/function status and performance that summarizes results, issues and upcoming plans. It focuses on highlights, exceptions, and matters requiring management attention. Status reports will be due to the Program Management office by 12:00 pm each Friday.

Time reporting documents record the actual hours spent by project team members on their assigned Work Breakdown Structure (WBS) tasks. These documents should be prepared by all project team members and reported at the end of each bi-monthly time period. A sample time reporting documents is included in Appendix 1D.

### 1.2.3 Methodology

A key component of process and systems development is being able to utilize a proven, repeatable methodology which delivers a high quality product. The Modernization Partner will utilize Andersen Consulting's *Business Integration Methodology* (which contains *Method/1*) to deliver its projects and program. The use of *Method/1* will be encouraged for legacy contractors and new contractors to the modernization program, but not mandated. All legacy contractors must demonstrate that they have a proven repeatable methodology that they will utilize while working within the Modernization Program. Methodologies will be reviewed by the Modernization Partner and SFA CIO organization for approval.

### 1.2.4 Measurement through the Modernization Scorecard

The Modernization Partner will provide oversight (management/control) of individual projects through the measurement, tracking, and reporting of 11 essential project management elements: scope, cost performance, schedule performance, architecture, risk, quality, communications/change management, human resources, project management rigor, use of Commercial off the Shelf (COTS) products, and an overall assessment. Each element helps to provide information and data used to evaluate the progress and performance of projects within the program.

These elements will be captured monthly in a project status report and modernization scorecard. The report and scorecard combine the use of Key Performance Indicators (KPI) which are based on quantitative and objective information, as well as subjective measurements. The project status report provides the essential information for measuring project success against plan, while the Modernization Scorecard will provide a visual representation of the status of the projects in relation to these elements. The Scorecard utilizes a Red (needs immediate management attention), Yellow (needs management review), Green (on target) approach to measure performance and progress of projects in relation to the 11 elements previously defined. Appendix 1E summarizes the Scorecard criteria.

#### 1.2.4.1 Scope

The focus of scope assessment is to understand how well the task order scope is defined and bounded, how well requirements related to the scope

are understood and what process has been put in place to control the change to scope and requirements of the project. Individual projects will be responsible for managing the scope of their work as well as submitting change requests if necessary. Change requests should be submitted to the Program Management Office and will be reviewed with the Integrated Product Team .

### **1.2.4.2 Cost Performance**

Cost performance measures the efficiency of the work being performed. The Cost Performance Index (CPI) and deviation from planned costs are two bases for measuring efficiency. The Modernization Partner will initially utilize a deviation measure of  $\pm 10\%$  for measuring the efficiency of work being performed. As the program and projects mature, the Modernization Partner will utilize a CPI to measure the efficiency of projects and the program. A CPI measure greater than 1.0 means the work performed costs less than planned. A measure less than 1.0 means that the work performed cost more than planned. Individual projects will be responsible for delivering within budget. Cost will be measured and tracked through the modernization program management office using project workbench.

### **1.2.4.3 Schedule**

Schedule performance is a measure of the effectiveness of the work performed. The Schedule Performance Index (SPI) and deviation from planned schedule are two bases for measuring effectiveness. The Modernization Partner will initially utilize a deviation measure of  $\pm 10\%$  for measuring the effectiveness of work being performed. As the program and projects mature, the Modernization Partner will utilize a SPI to measure the efficiency of projects and the program. A SPI measure greater than 1.0 means that work is being produced faster than planned or ahead of schedule. A measure less than 1.0 means that work is not being completed as quickly as planned. Individual projects will be responsible for delivering within the scheduled time frame. Schedules will be monitored through the modernization program management office.

### **1.2.4.4 Architecture**

IT architecture and standards are an IT expression of the strategic business direction. Compliance ensures IT solutions advance the business in its strategic direction, maximizes the value of IT by minimizing non-business-justified diversity, reduces the total cost of ownership by lowering complexity and integration costs, and extends the useful life of systems. IT architecture and standards will be measured by achievement of target architecture relative to Blueprint and Configuration Management Plan.

### **1.2.4.5 Risk**

Related risk and uncertainty associated with resource availability and productivity (cost, schedule, and human resources) should be addressed in those appropriate areas. Risk assessment should focus principally on the technical ability of the project team to successfully complete the authorized work.

### **1.2.4.6 Quality**

In order to monitor quality, projects will use the quality plan developed in the program plan. The quality plan defines the process for understanding and managing stakeholder expectations, for defining and implementing processes to deliver to those expectations, for measuring/verifying the ability of these processes to deliver on those expectations, and for improving delivery capability in terms of people, process, and technology. To monitor the quality of the program's activities, a variety of inputs including weekly status meetings, Risks and Issues Log, quality sessions, and lessons learned workshops will be used to gather feedback from team members.

### **1.2.4.7 Communications/Change Management**

The focus of communications and change management within projects must be on both the communications and change that affect the SFA organization other Modernization Partner projects and external organizations that are affected by the work effort. In assessing this area, the project manager should consider dependencies and interfaces, and work closely with the PMO and Organization design team to ensure that effective communications are distributed and needs are managed.

### **1.2.4.8 Human Resources**

Human and physical resources are essential to successful work efforts. Timely identification, acquisition, and retention of the right number of resources with the right skill sets are all critical success factors. Deployment of resources to program projects is organized by each stage of the process.

### **1.2.4.9 Project Management Rigor**

The focus of project management rigor is on the structure, planning, organization, and control of the project. Structure means an approved and defined scope, and a work breakdown. Planning means an approved, resourced, and baselined project plan. Organization means defined roles and responsibilities of the project team and required support team, and a fully engaged project sponsor. Control means project cost, schedule and scope are tracked to established baselines for cost and schedule measurements, and that the project is measured on a regular basis. Control also means that scope, requirements, cost, schedule and quality are baselined and under formal change control. Project teams will be required

to utilize a project planning suite (Microsoft Project, Primavera, ABT workbench).

#### **1.2.4.10 Commercial Off The Shelf Software (COTS)**

The objective of reuse is to avoid reinventing the information technology wheel in every project. Reuse applies to every aspect of successful project management and should be the result of a deliberate search of opportunities to leverage the work of projects that have gone before. As stated earlier, the purpose is not to reinvent the wheel, but to use COTS software technologies from other Andersen engagements and legacy contractors. When working on a project or plan that was successful, you want to acquire what you used earlier and enhance the quality to go beyond certain standards associated with the development of the current project.

#### **1.2.4.11 Overall**

The purpose of the overall assessment of the Modernization Scorecard is to provide a simple and easy way to measure the interaction of the individual project management elements in arriving at an overall picture of the health of the project.

### **1.2.5 Review Points, Sign Off, Approvals**

The Program management office will utilize two approaches to review, signoff, and approve projects and the program initiatives. Working with the SFA, the Modernization Partner will utilize an incremental approach to delivering capabilities by preparing detailed task orders and statements of work describing the proposed initiative and outlining the benefits to the SFA. As the initiative moves from conceptual design to delivery, subsequent task orders will be written and their acceptance and agreement to proceed with the work will provide the necessary review points, signoff, and approvals.

A second approach will be used when the task order is more comprehensive and requires design build, and run of an initiative within the same task order. The Modernization Partner will work with members of the SFA (Channels, CIO, COTR) to provide review points, signoffs, and approval check points as projects progress through development. Checkpoints are placed throughout each phase of the development lifecycle to ensure acceptance, conformance to specifications and architecture, quality, and readiness. Checkpoints are placed in the following areas:

- Accepting Operating Vision
- Accepting Value Realization Plan
- Finalize Plan Delivery
- Authorize Build and Test
- Authorize Deployment
- Authorize Service Operations



Please see Appendix 1F for a graphical representation of review points.

### **1.2.6 Reporting**

The project team will generate reports to provide status to the program management office in order to measure the projects progress and performance. These reports typically include: weekly status reports, monthly status reports, and monthly scorecards.

#### **1.2.6.1 Weekly Status Report**

The project team will prepare Weekly Status Reports. The project status report is a narrative report of overall project/function status and performance that summarizes results, issues and upcoming plans. It focuses on highlights, exceptions, and matters requiring management attention. Weekly status reports are due to the PMO by 12:00 pm each Friday.

#### **1.2.6.2 Monthly Program Report**

The project team will prepare Monthly Program Reports. The Monthly Program Report details the program's progress report (current program status, performance, achievements, opportunities, issues and risks), status of project deliverables (actual versus planned), overall cost summary, and overall work-days summary. Monthly Program Reports are due the 1<sup>st</sup> day of each month.

#### **1.2.6.3 Monthly Scorecard**

Modernization Scorecard will provide a visual representation of the status of the projects in relation to these project elements. This scorecard will capture measurement, tracking, and reporting of 11 essential project management elements: scope, cost performance, schedule performance, architecture, risk, quality, communications/change management, human resources, project management rigor, use of COTS products, and an overall assessment. Program Scorecards are due the 1<sup>st</sup> day of each month.

### **1.3 Reporting Templates**

The following templates can be found in Appendix 1G, 1H, and 1I:

Weekly Status Report

Monthly Program Report

Monthly Scorecard

### 2.0 Quality Plan

The Quality Management Process is an integral component of the Modernization Partner's objective of delivering value-based solutions. Through a series of predetermined quantitative metrics and independent reviews, the Modernization Partner expects to manage and control the delivery solutions, which adhere to:

- Uncompromised quality in all aspects of software development, systems implementation and process reviews;
- Ability to provide quantitative measures for managing benefits over costs; and
- Shared success between SFA, Program Stakeholders and other affected Trading Partners.

The process of assessing and ensuring quality will be an ongoing process throughout the life cycle of all projects. As the various projects enter specific phases, different yet consistent criteria for assessing quality will be used. For example the Modernization Partner will, in all applicable cases, assess the quality of testing as a component of implementation. Through measurable criteria, we will report on the effectiveness of test plans and the applicability of the overall system validation strategy. These findings may be used to fine tune the test plan in the early stages of the life cycle thus ensuring more rigorous validation prior to implementation.

The Modernization Partner's Quality Management Process is intended to:

- Define and manage the expectations of stakeholders,
- Define and implement processes to deliver to those expectations,
- Measure/verify the ability of these processes to deliver on those expectations, and
- Improve delivery capability in terms of people, process, and technology.

The underlying objective of the Quality Management Process is to ensure that all projects, undertaken by the Modernization Partner or other contractors in conjunction with the Department of Education, meet or exceed the expectations of the defined stakeholders while adhering to the established business guidelines and documented business rules.

This Quality Plan describes a tailored methodology, based on Method1™, which will be used to assist in undertaking periodic reviews of all deliverables in progress, in addition to facilitating reporting on the status of the overall program operations. These are achieved through the establishment of specific metrics, which can be used to provide an objective and measurable means of assessing progress and a series of assessments and recommendations, which will be used to provide an all-encompassing and independent view of project status. The quantitative nature of these metrics together with the independent assessment of status will form the basis of a Lessons Learned database, which will be used to fine tune future projects and avoid an iteration of known pitfalls or problems.

This Quality Plan will be implemented by the Modernization Partner to manage, track and report on the quality process during the various critical stages of projects undertaken by the Department of Education. While the plan encompasses all system life cycle tasks, its applicability is modular in that it can be customized to fit projects of all sizes and scopes. This plan focuses on the methodology, tasks, and metrics that will be used within the scope of the Quality Management Process of this project.

In accordance with the Modernization Partner's overall objectives, this Quality plan is intended to provide methods and tasks associated with:

- Reducing costs,
- Improving customer service, and
- Improving employee morale.

Within this framework, this plan incorporates those quality review methods and metrics that are both efficient and useful to meeting these objectives.

The remainder of this Quality Plan is divided into five sections:

### **2.1 Quality Management Task Plan**

This section describes the tasks and deliverables that will be completed by the Modernization Partner. This work plan was developed to describe the methodology and tasks that will be implemented within the scope of the overall Quality Achievement Process for this project, and includes the following steps:

- 1.1.1 Document and Publish Business Rules
- 1.1.2 Identify Project Level Stakeholders
- 1.1.3 Define Stakeholders' Expectations
- 1.1.4 Define Quality Verification Process
- 1.1.5 Define Metrics for System Development Projects
- 1.1.6 Define Continuous Improvement Process
- 1.1.7 Implement Quality Plan
- 1.1.8 Perform Quarterly Quality Review (Internal)
- 1.1.9 Quarterly Client Quality Management and Assurance Review (External)
- 1.1.10 Perform Project Quality Checkpoint Reviews – Independent Verification and Validation Review IV&V
- 1.1.11 Improve Quality Approach
- 1.1.12 Post Implementation Review

**2.2 Quality Review Methods** – This section describes the quality review methods, templates and checklists that will be used to evaluate Department of Education system projects that are within scope of the SFA Modernization Partner Project.

**2.3 Metrics** – This section describes the metrics that we recommend for use during this project. Although there are numerous metrics that have been developed over the past two decades that are intended to quantify systems development projects,

we have selected those metrics that will be useful to the Department of Education and efficient in data collection and analysis.

**2.4 Cost Analysis Methods** – This section describes the cost analysis methods that can be used to assist the Department of Education in assessing the value of project with respect to their cost.

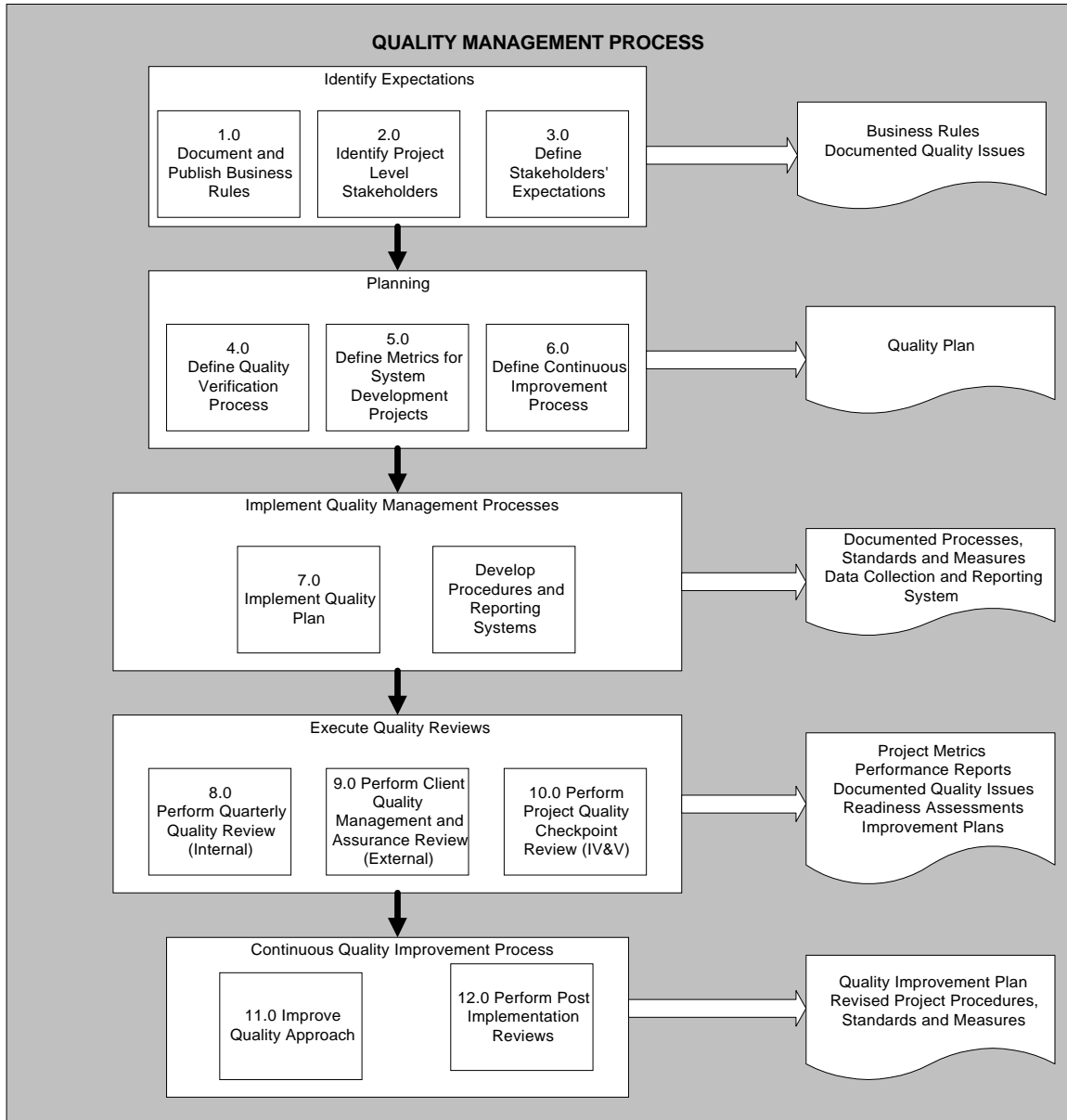
**2.5 Issues Tracking Methods** – This section describes the issues tracking process that will be used by the Quality Assurance Team to provide a component of individual project reviews and to provide input into the Lessons Learned tracking system that will be used as a part of the Quality Improvement Approach.

### 2.1.1 Quality Management Task Plan

This section describes the quality management tasks that will be performed and deliverables that will be completed during the SFA Modernization project for system development projects performed by the SFA and the Modernization Partner. These include:

- ***Modernization Partner – Responsible for the implementation of the quality management process, including internal and external quality reviews, recommendations for improvement***
- **COO Organization** - Participate in internal and external quality reviews
- **CIO Organization** - Provide input into the quality process and participate in quality reviews, define business requirements
- **CFO Organization** - Provide input into the quality process and participate in quality reviews, define business requirements
- **Channel Organizations** - Provide input into the quality process and participate in reviews, define business requirements
- **Legacy Contractors** - Provide input into the quality process Modernization Partner - Responsible for all aspects of quality

## Task Overview



### **2.1.2 Document and Publish Business Rules**

One of the critical components of the Modernization Partner's quality Management Process is the Department of Education's business rules and guide lines. In all applicable cases, the Modernization Partner will assess the quality of deliverables and requirements against these business rules. Adherence to these business rules will be a major quality focus on all ED sponsored projects.

### **2.2.1 Identify Project Level Stakeholders**

Project level stakeholders are considered key sponsors of particular projects. It is entirely possible that a given project will be assigned to several project level stakeholders. In these instances, the Modernization Partner will aim to coordinate efforts amongst the various sponsors and ensure that the final deliverable is one that satisfies all known requirements by all stakeholders.

This step in the process is intended to identify the key stakeholders and their expectations. It also is to develop a process to ensure that these expectations are properly managed over the duration of the project.

The Quality Management Process will assess the degree to which the Modernization Partner, Legacy contractors and the various other stakeholders were successful in achieving this goal. Lessons learned items will be critical to ensuring that future projects adhere to this critical component.

#### **Steps**

- Identify Stakeholders

### **2.1.3 Define Stakeholders' Expectations**

Understanding the expectation of stakeholders is critical to the success of a project. The quality Management Process will develop criteria to assess the degree to which these expectations were defined and documented.

#### **Steps**

- Identify Stakeholders Expectations and Reconcile Gaps
- Obtain Consensus and Communicate Expectations

### **2.1.4 Define Quality Verification Process**

This quality plan identifies the methods and criteria, which may be used to assess the overall level of project quality. We also have defined the criteria and processes by which desired quality levels will be ensured. This plan also describes the checkpoints, throughout the project life cycle, intended to ensure that stakeholders' expectations are refined, where necessary.

It is our objective to apply modified versions of quality management to all projects undertaken as a component of the Modernization Blueprint.

Approaches to this goal will be further defined in the Detail Quality Plan, but in short may include periodic program/project reviews, peer reviews, walkthroughs, readiness assessments, stakeholder reviews and team satisfaction measurements.

### **Steps**

- Define Project Processes, Standards, Measures, Goals and Responsibilities
- Define Project Quality Management Processes & Develop Reporting Systems
- Define Process Verification and Improvement Processes

The Modernization Partner, in conjunction with other Legacy contractors and ED Representatives also will assess various “Post Implementation” quality factors. In doing so, we will gauge the degree to which the “Expected Benefits” for a given project were realized in the post implementation period. This information will be useful in assessing future or related benefits and may be critical in approving additional phases or related enhancements.

### **2.1.5 Define Metrics for System Development Projects**

This plan defines quantitative criteria that will be used to assess a variety of quality factors for each given project, and are described in Section 4.0 of this document. These metrics will be aligned with the Modernization Performance Plan objectives of the sponsoring organization. There are three important factors regarding these metrics:

- 1) While every attempt has been made to define a comprehensive list of these quantitative measures, it is possible that additional ones will be identified during later projects. The Modernization Partner will enhance the list of these metrics as additional components are identified or made redundant.
- 2) The application of these metrics will be, in part, dependent on the nature of a particular project. It is entirely possible that certain projects will only utilize a subset of the criteria.
- 3) The Modernization Partner is committed to augmenting these quantitative metrics with independent reviews and readiness assessments. We have developed a standard format for these reviews and will utilize them to provide a high level synopsis of the status of a given project.

### **2.1.6 Define Continuous Improvement Process**

One of the most crucial components of quality management is the objective to avoid previously identified pitfalls. Quality tracking must be comprehensive enough to not only identify and measure project pitfalls and shortcomings, but to provide a mechanism for installing improvements – thus becoming a tool for improving quality rather than just tracking it.

The quality reviews and metrics mentioned earlier, and described in Sections 3.0 and 4.0 respectively, will form the basis for a comprehensive lessons

learned database. This database may be used to apply issues and resolutions from one project to further enhance the planning of a subsequent project, in addition to updating processes.

### **Steps**

- Utilize Issues Tracking Database
- Develop Lessons learned Database

### **2.1.7 Implement Quality Plan**

This plan includes a comprehensive quality checklist and criteria against which a variety of projects may be measured. Templates for readiness assessments and independent reviews of projects have been designed and are included in this plan. These methods and templates will be used by the Modernization Partner's Quality Assurance Team to implement quality reviews for projects sponsored by the Department of Education.

### **Steps**

- Perform Quality Assessment
- Identify Process improvements

### **2.1.8 Perform Quarterly Quality Review (Internal)**

The Program Management Office (PMO) will survey project level Stakeholders on a quarterly basis. Results of these reviews are shared with major stakeholders and subsequently shared with each team. Follow-up findings with an action plan for addressing deficient areas will be developed and published by the Program Management Office.

Management at all levels of the program will collect and monitor program metrics on a regular basis. The PMO will collect, review and publish the quality metrics on a quarterly basis. Identified gaps will be documented with the objective of being avoided in subsequent projects.

### **Steps**

- Execute Quarterly Reviews

### **2.1.9 Quarterly Client Quality Management and Assurance Review**

Andersen Consulting will perform CQMA independent reviews with experienced individuals within the firm. These Management Reviews will be conducted approximately every three months. The results will be documented in writing and will be available to the SFA Chief Operating Officer. Documentation will take the form of a brief status memo, as seen by the reviewer, and include recommendations on how to address issues and risks, or how to proceed with particular subjects.

The process includes a review of key work products (deliverables) and individual discussions with team members and management.

### **Steps**

- Execute Quarterly Reviews



### **2.1.10 Perform Project Quality Checkpoint Reviews – Independent Verification and Validation Review (IV&V)**

The Modernization Partner, in conjunction with SFA and an IV&V contractor will conduct reviews on individual projects through development, testing, and implementation. The IV&V contractor is separate from the Modernization Partner and is charged with verifying the quality of project deliverables, adherence to methodologies, and processes.

#### **Steps**

- Participate in IV&V Reviews

### **2.1.11 Improve Quality Approach**

The Modernization Partner expects to improve the quality approach based on the results of its quality reviews, including but not limited to, new or modified metrics, clarified stakeholder expectations and program wide process modifications.

The Modernization Partner intends to utilize the various quality issues to maintain a lessons learned database. We will utilize the data within this tracking mechanism to alter the quality tracking process as necessary.

#### **Steps**

- Recommend Process Improvements
- Communicate Process Improvements

### **2.1.12 Post Implementation Review**

On a regular basis, the quality team will conduct “Post Implementation Reviews”. The intention of such a review is to assess the actual benefits of a project with documented expectations. In doing so, the Modernization Partner hopes to measure the degree to which the “Expected Benefits” for a given project were realized in the post implementation era. This information will be useful in assessing future or related benefits and may be critical in approving additional phases or related enhancements.

The process includes review of key work products (deliverables) and individual discussions with team members and management.

#### **Steps**

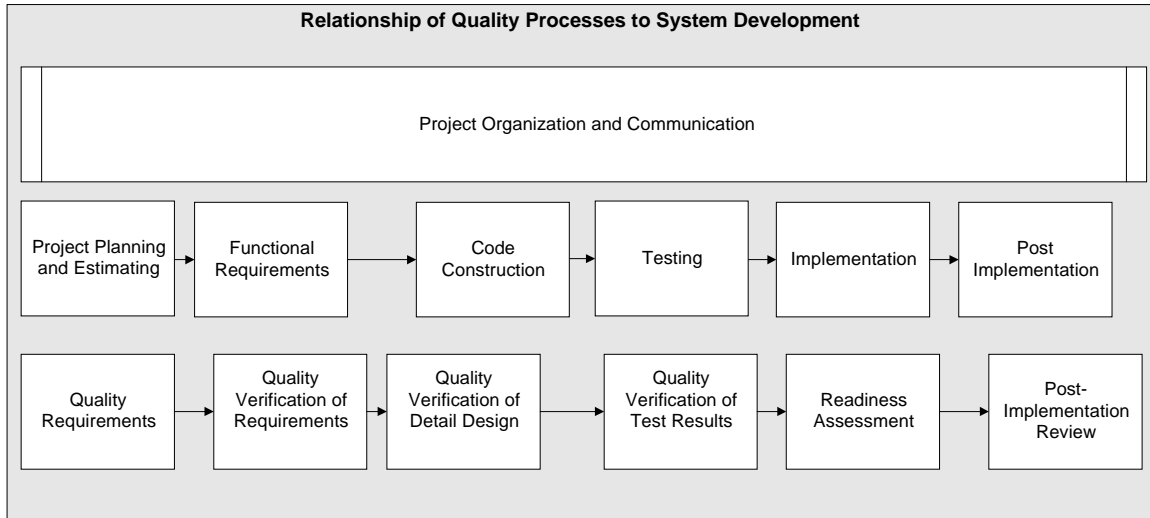
- Execute Post-Implementation Reviews

## **2.2 Quality Review Methods**

This section of the Modernization Partner’s Quality Plan describes the methods and underlying criteria, which may be used to assess the overall level of project quality. We also have defined the criteria and processes by which desired quality levels will be ensured. It is our objective to apply modified versions of

quality management to all projects undertaken as a component of the Modernization Blue Print.

The diagram below depicts an overview of the relationship between quality processes and the system development life cycle.



### 2.2.1 Quality Verification Process

Within the context of quality management, it is critical that quality is built into the project rather than just being observed from the outside. For example, if standards have not been documented and incorporated into the project tasks, then it will be impossible to evaluate whether those standards have been met, after the fact. Therefore, the quality review process for current and ongoing system projects within the Department of Education will need to begin incorporating these new quality standards and business rules before they can truly be evaluated against them. Further, the metrics also will require an iterative process that can then be applied to new and planned projects.

In general, quality management should begin at the planning stages of the project. Quality factors should be incorporated into plans and estimates and should specifically pertain to the project's overall goals and objectives. Scope and priority of the system functionality as well as likely duration of the usefulness of the code should be considered during the planning and estimating tasks. For example, the development of a new system that will become an integral part of the student lending process (e.g., claims and collections) should have different quality measures than a one-time report requirement within an existing system.

In addition to quality factors associated with results or outcomes, which are typically used by external quality review teams, there are process quality

factors that should be considered to be internal to the specific project. These include:

- Separating estimation from development – Assigning estimators that are independent from the developers when estimating time and cost factors for a project.
- Separating development from verification – Beginning the testing process before the code has been compiled. There is empirical evidence to indicate that code that compiles correctly typically has fewer problems.
- Creating separate incentives for estimators/planners, developers, and testers - Recognition for quality is a critical factor in quality management and will be addressed in other sections of this deliverable.
- Incorporating quality requirements into the system – Using standards and guidelines, certain quality requirements should be built into all system projects. These include acceptable system response time, naming conventions, standard report formats, coding standards, etc.

### 2.2.1.1 Quality Requirements

Quality requirements must be defined as part of the functional requirements, and will be verified and validated as part of the requirements, and at each review process during the project. A description of the four key system quality indicators, as identified in Method1™ are described below. Each of these indicators should be considered during the Quality Review process for each project.

- **Flexibility** - Flexibility indicates how easily the system can be adapted to meet changing conditions, including new functionality, new platforms, and failure correction. The system also must be able to support changes to the architecture to allow for the introduction of different applications, as well as to allow for changing business requirements. Lastly, the system must support changes to the application to allow a business function to occur in different ways, according to the needs of the business. Examples of system characteristics implementing flexibility requirements could include a "plug and play" architecture, fully commented code to ease maintenance, or multiple routes of navigation.

The last facet of flexibility is portability, the ease with which the software can be moved to another hardware or system software platform. Portability can be enhanced by selecting a programming language that can be supported by multiple platforms, designing a common data model, isolating hardware-specific components so that they can be changed for a new platform without affecting anything else, and having separate input/output modules if the databases will be different.

It is important to note that changes made to a component have the potential to affect flexibility. Therefore, flexibility tends to degrade over the maintenance life of a system. Flexibility will be compromised by quick fixes. The impact on flexibility of the correction of errors and defects should be fully investigated to ensure that flexibility is maintained, when possible. Because of the age of certain Department of Education Legacy systems, this will be an important consideration during this project.

- **Performance** - Performance measures the ability of the system to process all the business events within the time frame, specified by the service level agreement (SLA), given the number of concurrent users.

Performance should be tested under both typical and extreme conditions. Stress testing tests the behavior of the system under extreme conditions: high volumes, maximum number of simultaneous users, and queuing at the hardware resources (network, CPU, disk).

Quality reviews that include stress test results and capacity planning should provide the reviewer with sufficient information to assess the system's performance.

- **Reliability** - Reliability measures the system's ability to function correctly under both normal and abnormal operating conditions. Reliability includes error handling, security, recoverability (restart/recovery), availability (uptime/downtime), and serviceability.

Reliability tests prove that the application fails in a controlled manner, that it can recover from these failures, and that inputs (both correct and incorrect) receive a consistent response. Aspects of reliability can be balanced against each other. For example, if the system is to be very robust and able to recover and restart without user or operations staff involvement, then there is less of a need for extensive help desk support (the "serviceability" aspect of reliability).

During the review process, verification of detailed test conditions, comprehensive test scenarios, consistent test results should provide an indication of the system's level of reliability.

- **Usability** - Usability measures the ease with which users can interact with the system, the ease of learning, and the ease of continued use.

In addition, usability measures whether the system is efficient to use. The user interface is defined as both the layout and the flow of the application components with which the user interacts (i.e., screens, windows, and reports).

Usability testing involves testing the application's user interface during its development stages, before the project is so far into the development process that changes are not feasible. Aspects of usability testing should begin as early as possible in the development process. Usability tests performed after the user interface has been designed will only yield limited value, as any changes identified by those tests will likely be very costly to implement.

During the review process, the reviewer should verify that appropriate users are involved in both the development of screens and early stages of testing to ensure quality user interfaces while minimizing the risks and costs associated with re-work.

### **2.2.1.2 Quality Verification during the System Life Cycle**

The Quality Verification Process must be incorporated into the life cycle of the system with routine verification at specified checkpoints during each system project, whether a new development or modification to an existing system. Also, because of the number and complexity of the various systems developed and used by the Department of Education, the additional aspect of inter-project quality reviews also should be included when a project affects numerous stakeholders and Legacy contractors systems and operations.

### **2.2.1.3 Quality Verification Objectives**

Quality reviews should be scheduled at milestones during each project to meet the following objectives:

- To ensure that risks are identified, communicated and managed, as early in the life cycle as possible
- To ensure that the planned development process is being followed
- To benefit from the external reviewer's expertise and experience
- To provide updates on the status of the project to the Department of Education and the project's stakeholders

### **2.2.1.4 Project Planning and Estimating**

Quality review of the project planning and estimation phases includes the review of documents to ensure that the project plans effectively communicate the following:

- A valid basis for approving and initiating system development projects, using Department of Education standards and business rules.
- Identifying the information and processing requirements of the system.
- Developing a conceptual design of the proposed system for use in project evaluation and in accurate estimation of the development effort and cost, and accounting for the impact on Legacy contractors and other external systems.
- Describing the design and development, while documenting intended benefits.

The results of these reviews also will be used as input to the Post-Implementation reviews and as a basis for more accurate predictions of the costs and benefits of future projects.

### 2.2.1.5 Requirements and Design

Requirements define many aspects of the project, its processes and outcomes. Evaluating user requirements involves understanding both the functional requirements (those regarding the systems features and functions) and the other requirements, such as quality requirements and project requirements. The system development process traditionally focuses on functional requirements; other requirements such as quality requirements and project requirements generally represent new areas of project focus. A general list of the requirement types involved in systems development includes the following:

- **Functional requirements** define what the system must do. They define the software's capabilities and express the scope of the system development effort. They are the focus of the system modeling and specification effort in analysis.
- **Quality requirements** are measurable attributes that express a desired level of achievement (or goal), indicating how well a system must perform its intended function. Quality requirements include performance, reliability, usability and flexibility requirements. These are key inputs to the design process; they provide designers with statements regarding the levels of quality that must be achieved by the system.
- **Project requirements** describe the way that the project should be carried out. Project requirements may define the users preferences for how the project should be executed, the level of user interaction, or other project outcomes such as the transfer of knowledge among project team members.

### **2.2.2 The User Requirements Evaluation Process**

Evaluating user requirements occurs during the projects requirements gathering activities. The process contained in this technique is compatible with any form of requirements gathering activities, such as structured interviewing and Joint Application Development (JAD). The project team generally identifies and documents the user requirements following a number of such sessions.

Evaluating the user requirements allows the project team to use a focused effort in the requirements gathering process. This effort initially concentrates on gathering more general requirements, and then explores and clarifies specific areas through later interviews and JAD sessions. The focus of these further exploratory or clarifying sessions can be based on areas identified in the evaluation process.

#### **2.2.2.1 Understanding Project Needs and Requirements**

The success of the project is measured not only in terms of the value the system creates, but also the process and experience of the project team and users involved in the development process. Users can state needs and requirements that refer to the development process rather than the product; these are project requirements. Examples of project needs can include:

- A delivery schedule, usually coinciding with Department of Education requirements
- Approach for notifying the users of the project status
- Extent of user involvement
- Need for knowledge transfer from users, stakeholders or Legacy contractors

Traditionally, development projects that ignore project needs and requirements contribute to poor relationships between the users and technical staff. Project managers need to be aware of these needs and requirements, as they influence the experience of the users and development team. Ignoring these requirements may lower the morale of the users and reduce their enthusiasm and involvement in later projects or in later stages of the current project.

As part of the quality review process, functional and quality requirements will be assessed to determine whether the project under review is incorporating this approach. In addition to review of requirements documents and project plans, the reviewer should include project team interviews and/or surveys (depending on the size and scope of the project) to assess the quality and comprehensiveness of the project's requirements.

### 2.2.2.2 Requirements Traceability Matrix (RTM)

The Requirements Traceability Matrix defines the relationship between the users needs and software functional requirements, while making specific references to particular sections of the Department of Education's business rules. This matrix provides requirements priorities based on perceived business value, which helps the users and project team to better understand the rational behind a requirement's importance. This also provides the basis for efficient quality reviews by providing the most important project areas in which to focus the review.

The project team needs to assess why specific requirements are important. The project team should be managing the value related to functional requirements in several ways.

- **Context** - First developers need to be aware of the context of the requirement as well as its definition. The relationship between the business needs and the functional requirements provides information regarding why the requirement is important. Developers should use the context of the related business needs to frame their interaction with the users and testing of the requirement. This context assists the developer in addressing the need rather than just meeting the specification.

Design reviews, peer reviews, walkthroughs, prototyping sessions and other user interactions should focus on the systems ability to meet the users needs. Empirical evidence has shown the quality and efficiency of user contributions improves dramatically when they are given the business needs as the context for their participation in these sessions. The business needs related to a functional requirement also provide context to the testing conditions. Testers should seek to test the system from the perspective of business value in addition to the specification.

- **Focus** - High value requirements represent areas where the users expect the software to be at its strongest. This requires a focused development effort in order to ensure the software's areas of strength are where it matters most to the users. The Requirements Traceability Matrix highlights the software's high value requirements; it is the responsibility of the development team to focus on these areas in the development process.
- **Managing Focus** - A focused approach does not mean that the development effort only concentrates on the high value areas to the detriment of the rest of the system. The remaining requirements,



those that are not of high value, should continue to be developed with the best techniques and resources available. In other words, high value requirements are treated with special care with the remainder implemented as they always have been.

During the Quality review process, the Requirements Traceability Matrix will provide the reviewer with an efficient means to determine:

- Whether the business requirements are clearly defined,
- Whether the functional requirements have been developed to meet the users' business needs, and
- Which system functions should be used as the focus to sample the quality of the system development efforts.

### 2.2.2.3 Code Construction

The ability of the construction and test team to deliver code in support of user requirements is a valid measurement of quality. The Modernization Partner will track this metric by way of assessing "System Investigation Reports" (SIRs), which will be issued by the Test Team. The System Investigation Report (SIR) documents occurrences of where actual results do not meet expected test outcomes. Benefits associated with this metric are:

- Ability to gauge the adequacy of user requirements. Since Expected Results would have been calculated based on the requirements document, invalid requirements would inevitably lead to invalid results.
- Ability to provide quantifiable measurement of the quality of code delivered to the test teams.
- The provision of a tool to measure the effectiveness of the test team and their quality of work. SIRs, which are immediately attributed to invalid test conditions or test environments, will provide a useful training and assessment tool for testers.
- Ability to gauge the responsiveness of the development teams to address issues raised through SIRs.

SIRs also will be used to evaluate the mapping of requirements into system functionality for each project and will be used as input into the metrics database for use in estimating future projects and predicting their critical success factors.

#### Sample SIR

System Investigation Request (SIR)	
	SIR #:
	Test ID:

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Process:	Release #:	
Requestor:	Date Opened:	
Priority:	Date Closed:	
Condition ID:		
Current Status:		
Program/Screen ID:	Fatal Error:	
Description:		
Resolution:		
Code Difference List? Y/N	Unit Test Results? Y/N	System Test Results? Y/N
REGRESSION STATUS:		
Date Coded:	Date Migrated to Test:	
Date in Version Control:	Date Tested	
Test Approval:	Date:	
Final Signoff:	Date	

### 2.2.3 Quality Reviews

In general, quality reviews should include periodic program/project reviews, peer reviews, walkthroughs, readiness assessments, stakeholder reviews and team satisfaction measurements. In addition, they should be used to assess various “Post Implementation” quality factors. In doing so, the Modernization Partner’s Quality Assurance Team will gauge the degree to which the “Expected Benefits” for a given project were realized in the post-implementation period. This information will be useful in assessing future or related benefits and may be critical in approving additional phases or related enhancements.

#### 2.2.3.1 Benefits of Quality Review

A Quality Review ensures that:

- The project is adequately organized and staffed
- The project is properly controlled, and progress reports reflect the true status of each phase
- The project follows standards and business rules
- The project is working to meet its scope and objectives
- Project risks are being assessed and addressed
- Project tasks are being performed in sufficient depth
- Appropriate methods and techniques are being used

- The project repository is being maintained appropriately

The reviewer must be satisfied that all tasks, as defined in the project plans, have been performed (or are being performed) well, and that the plan to complete is adequate. The reviewer must also ensure that the project is sufficiently documented. All significant quality problems should be discussed at a progress meeting. To the extent possible, the reviewer should seek to make positive recommendations to rectify any problems.

The following relationships should be considered within the scope of the review:

- **Relationship to Business Case Management** - The metrics and goals defined for a system are important ingredients of the business case. They constitute the quality levels that may be anticipated. Significant change requests resulting from the inclusion of these metrics may be a catalyst for the revision of business rules. For example, the verification of performance requirements may point out the need for increased hardware requirements. Utilizing quality factors in this manner will inevitably increase user confidence, not only with the metrics, but also in the system being developed.
- **Relationship to Analysis and Technical Design** - The verification process should uncover functional gaps and quality issues that will be corrected by re-executing analysis and/or design activities. This creates iterations between these tasks. In general, a functional gap occurs when the system's design is not effectively implementing the requirements. These gaps are corrected through further analysis and then design. Design quality issues indicate areas where the designed system's efficiency can be improved.
- **Relationship to Project Management** - Communication with project management must include change requests or issues that result from quality verification. Project management will analyze change requests and issues, and decide what, if anything, should happen as a result. The outcome may include a review of user requirements, technical design and/or system design. Utilizing quality factors to communicate with project management will increase user confidence, not only with the metrics, but also in the system project itself.
- **Relationship to Implementation Schedule** - If any serious flaws or issues surface during quality verification, they might have an effect on the implementation schedule in the form of higher contingency factors, system complexity or external factors. Conversely, when quality verification indicates unexpectedly high quality levels, the factors may decrease. For example, if usability is very high, user training may require less time or effort.

### 2.2.4 The Quality Review Process

#### 2.2.4.1 Duration and location of review

Reviews should be scheduled in advance and should allow sufficient time for both the review and documentation. Additional time also needs to be incorporated into the schedule follow-up interviews to reconcile differences, if needed. The need for follow-up tends to increase as the size and complexity of the project scope increases and/or the number of affected Legacy contractors increases. When possible, the review should be conducted at the work site of the project manager.

#### 2.2.4.2 Quality Review preparation

The project team and project manager must prepare for the Quality Review. However, if appropriate discipline has been used throughout the project, this effort will be very small. This can be done in the following ways:

- During the planning and preparation of the project, create project-specific Quality Review checklists, based on the standard Quality Review checklists.
- Complete the Quality Review checklists before the Quality Review.
- Collect lists of specific issues that require the reviewer's consideration.

#### 2.2.4.3 Understanding Project Status

The Modernization Partner's reviewer talks with the project manager to gain an understanding of the current status of the project. If this is the first Quality Review on this project, some time should be spent on the background of the project, the user requirements, etc. If this is not the first review, the discussion should focus on progress since the last Quality Review.

#### 2.2.4.4 Checklist review

Based on an understanding of the project's objectives, scope and status, the reviewer will tailor the Quality Review checklist(s) with the project manager. The reviewer should help the project manager assess any risks brought up by the answers to the checklists. The project manager can also raise other issues not covered by the checklists and discuss the business risks and potential impact of these issues.

#### 2.2.4.5 Review of sample deliverables

The next step is a review of a sample of the project deliverables. There will not be time to review all of the deliverables, but a wide sample---including source code, if applicable---should be reviewed. The work object review can be used as an opportunity to verify the view of the project given by the project manager.

### **2.2.4.6 Status confirmation**

The next step is a discussion of the status of the project among the reviewer and one or more project team members, a user representative, and any others who are closely involved (Department of Education, systems development team, Legacy contractors, etc.). The objective is to confirm that others have the same view of project scope and progress as the project manager. Although it will not be possible at every checkpoint to talk to all of the interested parties, it is important that some discussion be held with a user representative at each Quality Review.

### **2.2.4.7 Wrap-up**

Finally, the reviewer will review the list of major findings with the project manager and discuss them in a wrap-up session. The objective should be for the reviewer and the manager to come to an agreement about what actions are necessary to resolve any issues or concerns. The results of the Quality Review are then reported to the Department of Education and the project management.

### **2.2.4.8 Issue investigation**

A problem discovered during the Quality Review should be corrected and analyzed to discover its cause. The results of this analysis can be used to improve the systems development process of future projects.

During the Quality Review process, the reviewer should assess whether:

- The users have been identified and their input has been incorporated into the system requirements.
- The importance of specific user groups and stakeholders has been incorporated into the project's priorities
- The appropriate users are involved in the testing activities associated with their areas of expertise and interest.

### **2.2.4.9 Role of the QA Reviewer**

The reviewer's primary role is to provide an objective review of the project, help identify potential risk areas, and suggest preemptive action. The reviewer should also confirm that the direction of the project is appropriate to the objectives of the Department of Education and its stakeholders. One of the benefits of Quality Reviews is that useful suggestions may come from informal discussions between the reviewer and the project manager. The project manager may often find these points helpful in forcing issues to the attention of senior management or users.

System development projects should be examined from administrative, functional, business, and technical perspectives. The external reviewers must be able to exercise independent judgment of the project. The reviewer

should therefore not be directly involved with the project or unduly influenced by project management.

The Quality Review is typically performed by a qualified reviewer external to the project and assisted by checklists, to ensure consistency in quality review process. Checklists should be developed by the project team in cooperation with the Department of Education, project management, and the reviewer, and possibly other Trading Partners (depending on the size and scope of the project). The standard checklists provided in this document should provide a starting point in defining the checklists that will be used during the reviews; the project specifics will help to decide how to customize the standard checklists.

Each question on the checklists should be answered and initialed. If specific project deliverables support the answer, these documents should be referenced. Issues that arise from asking these questions must be logged in the issues tracking database.

Both users and technical personnel are required to verify functional completeness and quality attributes. Users and their representatives verify that all requirements have been incorporated into the design and specifications; they help to verify consistency across business processes; and they verify usability. Technical personnel verify performance, reliability and flexibility. Special expertise is usually required to verify performance.

### 2.2.5 Quality Review Checklist

Within the framework of Method1™, the following checklist provides a template for the overview questions that should be answered during Quality Review. Detailed project phase-specific checklists are provided in appendix 2B of this document.

Quality Review Checklist	
1.	Have all requirements been cross-referenced to the business rules?
2.	Have all requirements been cross-referenced to the design?
3.	Has the design been reviewed by users, stakeholders and affected Legacy contractors to determine if it is likely to deliver the anticipated business benefits?
4.	Has the design been reviewed to determine if it is likely to meet the quality requirements of performance, reliability, usability and flexibility?
5.	Has the design been reviewed for performance characteristics that are consistent with Department of Education standards?

6. Were the specific hardware and software requirements defined in sufficient detail?
7. Have the minimum run times (excluding contention for resources) of all major batch runs been estimated?
8. Have the minimum response times (excluding contention for resources) for the high volume and other critical on-line transactions been estimated?
9. Have the hardware and communications network resource requirements been estimated?
10. Has the utilization of all hardware and communications network resources been estimated?
11. Has due consideration been given to the effects of hardware and communications network resource contention on response times and run times?
12. Has due consideration been given to the effects of peak processing periods?
13. Is there good reason to believe that the input volumes used in the performance estimation are realistic representations of the volumes that will exist after conversion?
14. Can the projected growth in volume, or in functions, be accommodated on the proposed equipment?
15. Have acceptable techniques been used to estimate performance and resource requirements?
16. Have the performance and resource requirement calculations been reviewed by technically competent personnel?

### 2.2.6 Quality Review Checkpoints and Milestones

The following is a summary of the quality review deliverables and milestones that should be evaluated during the Quality Review process in order to sufficiently answer the Checklist questions. As with the checklists, this list should be tailored to the specific project under review.

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<b>System/Project:</b> <b>Release #:</b> <b>Reviewer:</b> <b>Date:</b>			
	Available for Review (Y/N or Not Applicable)	Quality Rating (1-10)	Gaps/ Areas for Improvement
<b>Project Planning and Estimating</b> Project Plan Project Schedule Cost Estimates <b>Requirements &amp; Design</b> Up-to-Date Business Rules Documented Definition of Need/Business Case Documented JAD Session Results Identification of Affected Partner Systems Requirements Traceability Matrix Detailed Design Document <b>Code Construction</b> Source code (meets coding standards) Peer Reviews Unit Test Results - SIR count <b>Testing</b> Test Conditions Expected Result calculation System Integration Test Results - SIR Counts System Acceptance Test Results - SIR Counts Inter-System Test Results - SIR Counts Number of defects per module Stress test results <b>Implementation</b> Trading Partner notification Hour by Hour Plan First Live Batch Plan Conversion plan Tracking Plans for Post Implementation Benefits Implementation Walkthrough – Presentation Implementation Walkthrough – Documentation			



Training Plans			
<b>Post Implementation</b>			
First Live Batch review			
Post implementation Benefit tracking			
Post implementation Benefit Reporting			
Updating of related documentation			
<b>Awareness</b>			
Internal Communication - Re: New Product			
External Communication - Re: New Product			
Satisfaction Surveys			

### 2.2.6.1 Readiness Assessment

The Readiness Assessments for a specific project should be scheduled as the project nears the implementation phase. The number and extent of these assessments will depend on the complexity of the system or release as well as the number of stakeholders involved.

In general, the Readiness Assessment should include interviews with project management and selected project team members, review of project schedule, review of major project deliverables and review of project metrics (e.g., number of problems identified during testing, number of problems per module). This review should provide information for the reviewer to make an overall assessment of the likelihood of successful implementation, with respect to:

- Actual vs. planned completion dates of major milestones and deliverables for each phase of the project
- Identified project issues
- Risks associated with barriers to successful completion

As sample Readiness Assessment template is provided in Appendix 2C of this document.

### 2.2.6.2 Post-Implementation Reviews

The post-implementation review process should include an assessment of the system functionality as compared with the original project objectives. The process of the system development effort also should be considered, in relation to an analysis of project budget to cost and project schedule to actual level of effort expended for the project.

### 2.2.6.3 Satisfaction Surveys

A project's users are those who the project will have to satisfy in order to be successful. Identifying the users is a key component of ensuring a project's success. During the post-implementation quality review process, the use

of quality surveys will assist the reviewer in determining the extent to which users and stakeholders have been involved in the project and whether they are satisfied with the process and results. Appendix 2A provides sample survey forms that will be used as the template for these types of Quality reviews.

### **2.3 Metrics**

One of the most critical components of quality management is the tracking of a variety of pre-defined and quantifiable metrics, which may be used to assess the success of a project. It is important that these metrics are well defined, well known and measurable. Ambiguous metrics will produce negative effects since their application and usefulness will be questionable. The Modernization Partner believes that, where possible, these metrics should be flexible enough to accommodate specific idiosyncrasies of particular projects. It is entirely possible that quality metrics suited to one project may be inappropriate for another.

To this end, the metrics described in this section should be used as a template to utilize accurate and quantifiable measures to assess the quality of a variety of components inherent in the development projects that will be implemented by the Department of Education and its Trading Partners.

#### **2.3.1 Definition**

Metrics, in the context of the quality plan, are defined as criteria, which may be used by the Modernization Partner to measure the quality of a specific component of typical Systems Development Projects.

By first identifying the parts, and then assigning measurable criteria, the application of quality metrics will not only gauge the degree to which each step was followed, but provide a legitimate estimation of the overall quality of the end product.

#### **2.3.2 Need**

The primary requirement for quality metrics arises from the need to:

- Deliver quality systems capable of meeting user and business requirements while adhering to established budgets, resource constraints and predetermined time frames.
- Provide senior management with status and the ability to correct deviations from schedule at an early enough stage to maintain delivery criteria.

#### **2.3.3 Advantages**

From a project management perspective, the advantages of using quality metrics are:

- Identification of issues / quality concerns early in the life cycle.
- Ability to rectify issues in time to avoid compromising the delivery criteria.

- Ability to identify and address team / process weaknesses prior to an impact of a current project or the commencement of similar projects.
- Ability to utilize a series of checkpoints with the aim of steering towards a predefined objective.

### 2.3.4 Disadvantages

From a project management perspective, the disadvantages associated with utilizing quality metrics are:

- **The possibility of false readings** - Metrics tend to have the effect of encouraging behavior that maximizes the metric rather than encouraging the desired behavior. For example, productivity as measured by lines of code might encourage people to write more lines of code for the same function. Therefore, metrics should be chosen that measure the intent as directly as possible. If a direct measure is not available, then several metrics should be chosen in order to develop a balance in the behavior.
- **The possibility of alienation of team members**
- **The tendency for excessive tuning**
- **The tendency to abandon projects rather than address quality issues**

### 2.3.5 Usage

Metrics may be used in a variety of project life cycle events. They may be employed to assess inherent quality in the following:

- **End User Requirements** - Comprehensive end user requirements form the basis of most successful development projects. By compiling a step-by-step checklist the Modernization Partner aims to ensure consistency in the process by which requirements are defined and documented. By imposing some level of consistency, we can apply measurable criteria, which may be used to assess the quality of the requirements document and to provide guidelines for ensuring that as many of the required steps as possible have been followed through the initial phases of the project. While the objective is not to identify a recipe for complete user requirements, it is to identify the variety of components, which comprise a complete document.
- **Code Construction** - As the myriad of systems, which support the Department of Education's various projects gain in complexity, the quality of code construction increases in importance. This, together with overall cost of development and re-work have motivated The Modernization Partner to insert a check point after the conclusion of Development and prior to the commencement of Testing. This quality checkpoint will be based on documentation from Peer reviews, adherence to original requirements and a quantitative tracking of error conditions encountered during Unit Testing. Quality metrics also will be used to track re-work, by maintaining a log of programs that have consistently been returned to the development team.
- **Testing** - This traditional phase of the project life cycle, is generally the very first to fall victim to schedule slippage. The Modernization Partner will,

through the use of quality metrics and Readiness Assessments, track the progress of code through to the test team against the original schedule. Additional metrics will be based on the number of System Investigation Reports (SIRs) associated with each development project. SIRs will be used to document each occurrence of a problem or deviation from expected results. The resolution of SIRs will be indicative of the source of the problems - quality of construction or quality of testing. The Modernization Partner's quality plan thus includes maintaining a database of all SIRs raised during the testing phases.

- **Implementation** - Since most implementation plans are compiled by Development teams, they are generally high level and do not include contingency or back-out options. The Modernization Partner aims to monitor the quality of implementation planning by assessing participation and the degree to which individual tasks are identified, prioritized and tracked. Realistic contingency planning also will feature in our overall review of implementation. The Modernization Partner also aims to track the frequency of updates to the plan and the degree of accuracy of implementation plans at various points-in- time, during the life cycle of the project. End User training and updates to existing documentation also will be tracked.
- **Post Implementation** - Metrics associated with the post implementation period relate mostly to measuring actual benefits and costs against the original plan. Projects traditionally include exhaustive cost / benefit analysis at the outset. However, there is little analysis in the post implementation period as to whether or not any of the planned benefits were realized. While actual costing is generally tracked more rigorously, there is little or no communication of actual costs to the resources responsible for providing the original estimates. By tracking actual against planned outcomes, The Modernization Partner aims to fine tune the cost / benefit analysis process so that future projects present a clearer picture of the outcome from the beginning.
- **Awareness** - Metrics associated with awareness aim to assess the "Quality of the Message". Development projects generally lead to a product. The Modernization Partner aims to measure the degree to which communication regarding the product is managed throughout the lifecycle. We will assess factors such as the involvement of Trading Partners, schools, regulatory agencies or the borrower community. We also plan to measure the degree to which each of the affected partners was involved in designing, validating or implementing the end product. The Modernization Partner also plans to assess the effectiveness of post implementation communication with respect to product or service announcements.

### 2.3.6 Attributes

In order for quality metrics to be applicable and ultimately useful, they must have some level of user enthusiasm and be logical, objective, useable, and flexible.

- Logical - One of the most important of quality metrics is the logical nature of those metrics as they pertain to the end goal. For example, the quality metric associated with the compilation, documentation and communication of user requirements is an integral component of the overall life cycle. However a quality control process focused entirely on formatting criteria of the requirements document, while ignoring the detailed contents, is less logical.
- Criteria whose application is deemed as illogical will not only dilute the final metrics, but could reduce their importance in the eyes of those being tracked and those being presented with the results. Since one of underlying aims of quality metrics is to enhance the process, the Modernization Partner will strive to compile logical and applicable criteria for its metrics. In order to provide a constant source of measurement, quality metrics must aim to provide objective evaluation of tracked components. By establishing objectivity, in conjunction with some degree of flexibility, the Modernization Partner will be able to measure most Department of Education related projects using similar criteria.
- It must be noted at this point, that the nature and cope of the project will be a determining factor in the applicability of quality metrics. The application of metrics should be, as far as possible, usable and complimentary to the overall process of delivering the end result. The Modernization Partner plans to avoid establishing metrics for their own sake. Such criteria will not only reduce the overall utilization of metrics, but will lead to little or no enhancement in the overall process.
- One of overall objectives of applying metrics is to improve future occurrences of similar projects. Lessons learned items are only useful if they are related to measurements with some level of applicability to the project.
- Metrics of all kinds and especially quality metrics must be flexible enough in nature to accommodate two very important scenarios:
  - Where a measured component simply does not exist or is drastically reduced in importance based on the nature of the development effort. For example, unit test results may not play an important role in web development projects.
  - Where previously measured items and lessons learned may be used to enhance the criteria by which the quality of future projects is tracked.

The value of a system can be measured by business case metrics, demonstrating the benefit of a change brought to the business process. In turn, the business case metrics are supported by product metrics (or quality attributes), such as functionality, reliability, usability, efficiency, maintainability, and portability. These characteristics, which have a great deal

of influence on architectural design decisions, must be tied directly to the business value they are to enable. Finally, process metrics support the product metrics by measuring whether the process is likely to result in a system that satisfies the product quality requirements. These metrics typically include productivity and defects.

### **2.3.7 Business Case Metrics**

The business case documents the justification for the system development effort. Furthermore, it identifies the business objectives of the system, quantifies the ongoing and one-time costs and benefits in economic terms, and documents any intangible benefits. This should be used as the basis for the business case review. The quality team will use the business case format provided in the investment management section.

### **2.3.8 Business Objectives**

Business needs expressed as business objectives are the reasons the development effort is being undertaken. Strategic success measures should be developed for each business objective in order to provide an operational definition for that objective; these objectives may be internal or external in focus.

Typical internal business objectives and relevant strategic success measures include maximizing advancement and career development opportunities of employees (measured by the percentage of promotions and transfers among employees); maximizing employee satisfaction (measured by employee turnover); maximizing internal department service levels (measured by a score on an internal department satisfaction survey); and minimizing internal costs (measured by internal operating costs).

Typical external business objectives and relevant strategic success measures include maximizing customer satisfaction (measured by phone service response time or frequency of inventory stock-out); maximizing market share (measured by the market share percentage); maximizing sales (measured by sales dollars or volume); and minimizing costs (measured by total costs).

### **2.3.9 Product Metrics**

Product metrics provide a means of quantifying the characteristics of system quality. These characteristics must be tied directly to the business value they are to enable. Traditional software quality characteristics include: functionality, reliability, usability, efficiency, maintainability, and portability.

- **Functionality** - Functionality is defined as a set of attributes that influence the existence of a set of functions and their specified properties. The functions are those that satisfy stated or implied needs. Characteristics of functionality are suitability, accuracy, interoperability, compliance, and security.

- **Reliability** - Reliability is defined as a set of attributes that influence the capability of software to maintain its level of performance under stated conditions for a stated period of time. Characteristics of reliability are maturity, fault tolerance, and recoverability.
- **Usability** - Usability is defined as a set of attributes that influence the effort needed for system use--and on the individual assessment of such use--by a stated or implied set of users. Characteristics of usability are understandability and operability.
- **Efficiency** - Efficiency is defined as a set of attributes that influence the relationship between the level of performance of the software and the amount of resources used, under stated conditions. Characteristics of efficiency are time behavior and resource behavior.
- **Maintainability** - Maintainability is defined as a set of attributes that influence the effort needed to make specified modifications. Characteristics of maintainability are analyzability, changeability, stability, and testability.
- **Portability** - Portability is defined as a set of attributes that influence the ability of software to be transferred from one environment to another. Characteristics of portability are adaptability, installability, conformance, and replaceability.

### 2.3.10 Product Metrics and the Business Case

The system's quality requirements should support the business case. Product metrics provide a basis from which different stakeholders can agree that the delivered system objectively meets its quality requirements; therefore, product metrics lead to the realization of the stated business objectives. The acceptable system performance level for each quality attribute is defined during requirements analysis; this becomes the system's quality requirements definition. Comparing the measured performance to the acceptable performance determines whether the system has met its quality requirements.

### 2.3.11 Process Metrics

Process metrics support the product metrics by measuring whether a process is likely to result in a system that satisfies the product quality requirements. These metrics typically include productivity and defects.

### 2.3.12 Productivity

Productivity is a measure of the efficiency of a process. Validating actual productivity rates against budgeted productivity rates provides feedback throughout the system development life cycle as to whether the effort will deliver the expected product in the estimated timeframe. A common metric of productivity is actual vs. budgeted time or cost to complete a task; time can be expressed as hours of effort or elapsed days, while cost is usually expressed as dollars.

Since productivity will be affected by changes to the product requirements, another important metric is scope drift. Scope drift is a measure of the magnitude of additions, changes, and deletions to the original scope. Any deviation from the original scope definition--even a deletion--will negatively affect productivity.

### **2.3.13 Errors, Defects, and Faults**

Errors, defects, and faults measure the effectiveness of a process. The fewer produced by a process, the more likely it is that the product will satisfy the user and the more likely it is that the process is working properly.

Errors are non-conformances that are discovered in the phase in which they were committed. These are the least costly to correct. Defects are non-conformances that are discovered in a subsequent phase. These are costly to correct and should be avoided. Faults are non-conformances discovered once the system is delivered. These are the most costly to correct and may also cause business losses.

The metric that captures the ability of the process to catch problems before they become defects is Stage Containment Repair Effort Percentage. This metric is defined as the cost of repair divided by the cost spent originally by stage.

The metric that captures the combined cost of these three categories is the cost of quality. The cost of quality is defined as the sum of the cost of prevention (up-front), the cost of appraisal (inspection and testing), the cost of operation (business losses due to a failure), and the cost of correction (scrapping or rework as well as process modification).

Since the cost of quality is one of the highest cost elements in developing systems, it is important to use metrics that can predict the likelihood of defects and failures. Where this likelihood is high, an increased investment in prevention and appraisal will reduce the total cost of quality, since errors are cheaper to fix than defects and failures.

A predictor of the overall level of defects is solution complexity, or degree of innovation; this measures the inherent complexity of a system. The most common method of determining the degree of this type of complexity is to answer questions regarding the people, process, and technology characteristics of the proposed solution. These types of questions are usually used to inflate or deflate development estimates by a certain percentage. Once a solution is selected, this complexity cannot be reduced; however, management decisions to invest more on up-front prevention techniques will lower the total cost of development.



A predictor of module-level defects is design complexity; this measures the degree of complexity introduced by design decisions or practices. There are two major metric categories for this type of complexity: size and branching complexity. Size can be measured by lines of source code. Typically, modules under 500 lines of code are easier to test, and therefore produce fewer defects. Branching, or flow, complexity is measured by the McCabe complexity metric. This metric measures the complexity of a module in terms of the number of logical paths it contains. Although tools are available to produce this count automatically, it can be computed manually by adding one to the number of logical IF statements; a McCabe complexity greater than 10 leads to error-prone modules. Design standards that keep modules within these limits can reduce the cost of quality.

### **2.3.14 Process Metrics and the Business Case**

Process metrics measure whether a process is effective and in control. Productivity metrics measure whether the process will deliver the system within the expected timeframe. The delivery timeframe may affect the realization of business objectives and the business case economic model.

The product must meet its quality requirements if it is to enable the expected benefits and cost savings. For the system to meet its quality requirements, it must be free of defects. Lowering the likelihood of defects and shifting the investment of time toward prevention and appraisal are two ways to influence the process in order to help meet this objective. Furthermore, the same techniques used to reduce development defects will add to increased maintainability and reliability, both of which contribute to the delivery of expected ongoing benefits and reduced costs.

### **2.3.15 Metrics Selection**

Metrics should only be applied to highly valued functional, quality, or project requirements, so that effort is spent on areas most important to the stakeholders. They should be reliable, objective, collectable, controllable, and directly related to what they are intended to measure.

Reliable means that the process of collecting the metric must result in the same measurement value if repeated, and that this value must be accurate. For example, one method of counting the number of lines of code in a program is to subtract an estimate of the number of blank lines from the last line number. This method would not be as reliable as a tool that automatically counts the number of source statements in a program.

The definition of a metric should be documented clearly so that it may be used objectively. (For example: Does the definition of a line of code include only new executable lines, or does it also include data definitions, comments, JCL, macros, and reusable code?) The meaning of a measurement value for a

chosen metric must also be objective. (For example: Is an increase in the number of lines of code produced per day an indication of increased productivity, or a decrease in the efficiency of the code?)

Metrics should also be easy to collect. Whenever possible, they should be a natural by-product of the process. For example, problems are tracked as a by-product of the change control process, actual and budgeted time are tracked as a by-product of the project management process, and the size of a program is often computed in several ways by the compiler. Automated counting tools should be considered for metrics that meet all other criteria except ease of collection.

### **2.3.16 Testing Metrics**

A sample of metrics are provided in Appendix 2D that pertain to the tracking of system problems over time and across projects that can be used to better understand the potential risks and cost consuming areas of Department of Education projects. These metrics may form the basis for generating consistent data across projects to allow the Department of Education to begin predicting the success of future projects, both in time and cost factors.

## **2.4 Cost Analysis Benefit**

Many of the projects undertaken by The Department of Education and its contractors are intended to deliver a benefit. This benefit, which has a related cost, should, in most all cases, be quantifiable either in increased customer satisfaction, decreased operating costs or improved employee morale.

One of the better means of assessing the quality of a final product is to perform a post implementation review. In this review, the Modernization Partner will aim to gauge a measurement for the degree to which a final deliverable was able to meet planned benefits.

The post implementation “Planned” versus “Actual” analysis will result in the following:

- Quantifiable measurements for benefits of each particular project.
- Ability to highlight and measure non-planned benefits, which may have arisen out of a development effort.
- Ability to highlight and measure non-planned deficiencies overlooked during the requirements gathering phase.
- A learning tool to be used for future Cost / Benefit analysis.
- The Modernization Partner will utilize the periodic review process outlined in the Investment Management for measuring cost/benefits and achievement of business case by projects/initiatives.

### **2.5 Issues Tracking Management**

The purpose of the issues control system is to organize, maintain, and track the resolution of issues that are identified by Quality Assurance Team members actively involved in the project. Quality issues will be tracked using the issues tracking database and will be viewed via a quality view within the database that displays the issues related to quality.

### **2.6 Quality Plan Templates**

The following templates can be found in Appendix 2A, 2B, 2C, 2D:

- Sample Employee Satisfaction Survey
- Sample Method 1 Based Checklists
- Readiness Assessment
- Sample Method 1 Testing Metrics

### 3.0 Communication and Customer Relationship Management

The Modernization Program involves implementing the Modernization Blueprint by assessing the existing Student Financial Assistance (SFA) processes and systems and recommending the changes necessary for SFA to achieve the three main SFA Modernization objectives: lower operational unit costs, increased customer satisfaction, and increased employee satisfaction. The Modernization Program will support the creation and execution of projects to implement the target architecture including integrated systems, current technology and efficient processes.

#### 3.1 Communication Platform and Plan

The implementation of the Communication Plan seeks to reduce resistance and increase acceptance and support for the Modernization Program by building credibility for the effort through communication with all stakeholders. The Modernization Program's Communication Plan capitalizes on SFA's existing Organization Transformation communication efforts.

The communication efforts outlined in this document will focus on delivering appropriate messages to each key stakeholder group, while keeping in mind the effects of timely communication on organization change and satisfaction levels. This plan is intended to be used as a "working" document that will be monitored and updated as new needs are identified, and as organization transformation and modernization efforts continue to evolve.

This Communication Plan:

- Establishes communication objectives,
- Identifies potential barriers to communication,
- Identifies stakeholders,
- Provides key messages,
- Establishes guiding principles, and
- Identifies primary communication vehicles.

##### 3.1.1 Communication Objectives

The main goal of the Communication Plan is to cultivate awareness, understanding, and acceptance of the changing environment. This understanding and acceptance will help the organization meet its new business strategy and focus.

The Communication Plan objectives of the Modernization Program are to:

- Raise awareness, understanding, and commitment to promote involvement in Modernization initiatives such as opportunity identification and analysis, the investment review process, enterprise architecture and integration, and re-engineering planning and

Modernization projects (the involvement will include prototyping, testing, training, development, process and procedure teams, and any other opportunity for users to become directly involved with the project);

- Communicate decisions, events, milestones, status, and general information clearly and in a timely manner;
  - Address concerns from target stakeholder groups;
  - Inform stakeholders of project progress and milestones;
  - Inform affected users of impacts to them as a result of the Modernization Program;
  - Reinforce benefits that can be achieved from this effort;
  - Provide all audiences with feedback channels for comments, questions, and concerns regarding the project;
  - Celebrate milestones and ongoing audience successes in implementing the changes;
  - Create demand and excitement for the Modernization Program and its future benefits;
  - Manage stakeholder expectations; and
  - Reduce uncertainty and fear.

### **3.1.2 Potential Barriers to Communication**

Potential barriers to communication should be considered when developing key messages and using communication vehicles to distribute information to the stakeholders.

The following issues have been identified as potential barriers to communication:

- Position power in organization takes precedence in priority setting. (For example, “This is not coming from my organization therefore it is a low priority.”)
- A lengthy approval process impedes timely message delivery.
- Messages do not always filter throughout the organization to the appropriate stakeholders.
- Historic communication channels have proven to be ineffective.
- Not everyone regularly accesses the intranet.
- Not everyone has the same e-mail system. Attachments are nearly impossible to deliver electronically.
- Employees believe that they receive too many messages from too many senders.
- Employees express that too many demands are placed on their time (For example, “I don’t have time to attend meetings, read memos, etc”)

### 3.1.3 Stakeholders

Identifying the key stakeholders is an essential step in developing the communication strategy. For purposes of this Communication Plan, ten key stakeholder groups have been identified. Each of these groups plays a unique role in the change initiative. These stakeholder roles will guide the second step of building a communication strategy – key message development. It is critical to note that the communication flow to all of these stakeholder groups involves a comprehensive two-way process of delivery and feedback.

Internal Key Stakeholders	Role
Executive Management (Management Council)	Provide program wide vision and strategy to guide all efforts Provide feedback on programs' impact on the business
Manager	Provide business-focussed advice, direction, and insight for initiatives Provide feedback on programs' impact on the business
Employee Base at Large	Group directly impacted by program changes Provide feedback on programs' impact on the job
CIO Organization	Provide IT support and IT strategic direction Provide feedback on programs' impact on the business
Investment Review Board	Serve as partners in reviewing project profiles and making funding recommendations Provide feedback on programs' impact on the business
External Key Stakeholders	Role
Students	Programs' main customer base Provide feedback on programs' impact on the customer experience
Schools	Customer who also serves as a program partner to enhance service levels for students Provide feedback on programs' impact on the student/school experience
Financial Partners	Customer who also serves as a program partner to enhance service levels for students Provide feedback on programs' impact on the student/financial partner experience
Government Departmental Agencies and Corporations	Provides inter-agency/corporation information support and may be impacted by program changes Provide feedback on programs' impact on other departmental agencies/corporations
Congress	Provides program support and funding Provide feedback on programs' impact on the public

### **3.1.4 Key Messages**

The following key messages were identified based on the goals of the Modernization Program, the communication objectives, the expected information needs of stakeholders based on their unique roles, and the current understanding of the organizations communication culture.

#### **Modernization is a “Burning Platform”**

The transition of SFA to a Performance Based Organization has significantly raised expectations of SFA to achieve improvements in the 3 key objectives: reducing unit cost, increasing customer satisfaction, and increasing employee satisfaction. “Modernizing” the systems is one method to achieve progress on the established objectives and to achieve the service levels customers expect.

Management teams are not able to get the information they need to focus resources on the right projects to achieve improvement goals. There are redundant systems and processes, and projects underway are not clearly focused on resolving the cost and complexity problems resulting from the current environment. The Modernization Program will help to address these critical issues.

#### **Modernization as an Enterprise Solution**

Modernization has been endorsed by senior management as one of the SFA’s approaches to achieving its key objectives. Under the Modernization effort, there will be improvements targeted for processes and supporting technologies with a holistic approach to change in order to achieve dramatic improvement.

#### **Workplace Impacts**

The Modernization Program will bring changes to the workplace. While the degree of impact will vary by functional unit and responsibility, everyone will be involved in supporting SFA’s Modernization Program and will see new processes and decision making criteria for process and system changes.

#### **Project Status and Issues**

Communicate status of project to all stakeholders based on information needs.

#### **Success Stories**

Collect, share, and distribute success stories from Modernization participants and stakeholders experiencing positive changes resulting from the Modernization effort.

#### **Customer Benefits**

It is important for the success of the entire Modernization effort to emphasize that the benefits to the customer as a result of a new way of doing business outweigh the challenges that the organization faces as a result of this transition.

The potential benefits to the customer include:

- Internet-based application and online financial planning tools;
- Reduced application turnaround time;
- Convenience of calling one number for any problem;
- Optimized time on the phone with knowledgeable representatives;
- Quickly answered calls;
- Minimized need to call back because the question is answered correctly the first call; and
- Consistent call quality.

### **Personal Benefits**

The Modernization Program will help provide the tools and direction necessary for employees to achieve results. Some of the potential results include:

- Clearer direction on projects and stronger focus on results;
- Defined performance and quality standards; and
- Access to knowledge and technology that will increase skills.

### **Stakeholder Responsibilities for Transition**

Employees throughout the organization will be expected to participate in the Modernization Program. Responsibilities will vary by group but will generally include:

- Being informed about changes;
- Participating in the training necessary;
- Knowing and following proper procedures and guidelines;
- Using new tools and processes as prescribed; and
- Participating in programs such as prototyping, guideline development, communications teams, focus groups, surveys, etc.

### **Guidelines, Procedures, and Standards**

Publish, advocate, and champion use of guidelines, procedures and standards.

### **General Contact Names/Support**

Advertise contacts for activities and establish feedback mechanisms.

### **Modernization Summary Presentation**

Provide an overview that tracks the history of the Modernization Program including a Modernization Program definition, partner selection explanation, and program/project activities overview.

### **Training Needs**

Present training approach and requirements for each audience as appropriate.



### **Opportunities for Involvement**

Promote opportunities for involvement in the Modernization Program initiatives as appropriate.

### **Deployment Announcement**

Announce date of deployments to various groups and customers as appropriate.

### **Deployment Details**

Provide stakeholders specific details regarding transition including systems deployment, facilities changes, training dates, etc.

### **3.1.5 Guiding Principles**

Guiding principles can be employed to emphasize the preceding messages. When creating the communications that convey the outlined key messages, several guiding principles should be used to combine message, media, and timing.

These guiding principles include:

- Communications will be specific to the circumstances of each key stakeholder group (as defined by their roles);
- Communications will be as accurate as possible. Misleading information and inaccuracies can lead to frustration, possible disappointment, and ultimately a loss of credibility;
- Messages will be delivered at the point in time when they will mean the most to the stakeholders concerned;
- Communications will be visible, creative, understandable, and professional;
- Audiences will be involved in the development of key messages;
- Stakeholders will participate in communication (messages conveyed by trusted and experienced staff will have maximum impact and effectiveness, building buy-in and support);
- Efforts will be made to deliver personal and group-specific messages to Channel General Managers and their organizations; and
- Audiences will be provided opportunities to respond to messages and provide feedback.

### **3.1.6 Communication Vehicles and Effectiveness**

The Modernization Partner team will work with the Director of Communications in publicizing organization wide efforts and success stories and in soliciting feedback to ensure communication efforts are effective in meeting the organizational goals.

The Modernization Partner team will be responsible for developing messages with Modernization Program specific content and soliciting direct feedback.

The team will capitalize on communication vehicles already in use by the organization and will consult the Director of Communications for timing, branding, tone, etc.

The outcome of these efforts will be a more educated and on-board stakeholder group, aware of the Program's goals, status, and achievements.

### Communication Vehicles:

- Inside SFA (periodic one page updates on critical issues affecting the organization)
- Transformation Website \*
- Poster Campaign (promotes visibility throughout building)
- Internal Communicators (formal/informal)
- Emails
- Listening Sessions (question/answer session with management)
- Specific Presentations (as appropriate)
- Monthly Status Reports

Measuring communication effectiveness is comprised of five key components: measuring message comprehension, delivery, and relevance; assessing changes in knowledge and perceptions; encouraging suggestions on communication improvement; demonstrating and publicizing measurement results; and reviewing and enhancing the Communication Plan based on feedback.

Communication effectiveness measurement provides visible evidence to the audiences that their reactions/suggestions are valued and that they can make a difference. By facilitating two-way communication, employees will have the opportunity to ask questions and clarify their roles and responsibilities in the organization, and in so doing, increase their level of acceptance.

### Feedback Vehicles:

- Transformation Website \*
- Internal Communicators (formal/informal)
- Emails
- Listening Sessions (question/answer sessions with management)
- Feedback Questionnaire/Forms (as appropriate)
- Meeting Wrap-Up Sessions

The Modernization Partner team will support responding to general internal and external inquiries and comments (For example, post answers to frequently asked questions, etc.) A summary of feedback results will be compiled and used for evaluation and tracking purposes. The outcome of this effort will be knowledge by the Modernization Partner team and SFA of stakeholder interests and communication gaps.

\* Need for consolidation: developing and creating new branded SFA website

### 3.2 War Room

The Modernization Partner team will create a common communication area referred to as the “war room”, located at a designated area at SFA. The war room will serve as the primary communication and resource area for SFA and Modernization Partner team members to go to gain the most recent status and information about the Modernization Program. The war room communications will be updated on a monthly basis in conjunction with information submitted on the Monthly Status Reports.

The war room will provide a group environment with plenty of space and necessary reference materials readily available. SFA and Modernization Partner team members will be able to use the war room to work together to share new ideas, outstanding issues, and probable risks. The war room will be used as a monitoring tool, resource room, and meeting place.

The war room will serve as a project monitoring tool by displaying project charts and maps on the walls and white boards that depict the team’s progress on the deliverable schedule. Team members will be able to check deliverable performance, scope, and status against the project plan at any time. Deliverable templates and assessment forms will also be available.

The war room will also serve as a resource area. All project reference documentation will be located in one common area. Documents such as project scope, Blueprint, Modernization Partner and SFA organization charts, quality plan and expectations, project policies and standards, etc. will be located in the room.

In addition, the war room will be used as a meeting place for status meetings, sub-team meetings, lessons learned sessions, and brainstorming sessions. It can also be an area that provides facilities for the team when they are not in local units (copiers, computers, printers, etc.). The war room will be a multi-purpose communication and resource activity center for SFA and the entire Modernization Partner team.



### 3.3 Communication Matrix

The following Communication Matrix describes different communications, mediums, and messages in relation to timing and key stakeholders. The matrix will be used to develop messages and assign delivery options.

Communication	Medium	Messages	Timing	Audience	Develop	Deliver
Modernization Activities	Staff meeting presentations, Management Council	<ul style="list-style-type: none"><li>• Burning Platform</li><li>• Modernization as an Enterprise Solution</li><li>• Workplace Impacts</li><li>• Project Status and Issues</li><li>• Success Stories</li><li>• Customer Benefits</li><li>• Personal Benefits</li><li>• Target Group Responsibilities for Transition</li><li>• Guidelines, Procedures and Standards</li><li>• General Contact Names/Support</li><li>• Training Opportunities</li><li>• Opportunities for Involvement</li><li>• Deployment Announcement</li><li>• Deployment Details</li><li>• Modernization Summary Presentation</li></ul>	As Requested	Management Council, Directors, Managers, Team Leads, Staff		
Modernization Activities	As Requested	<ul style="list-style-type: none"><li>• Burning Platform</li><li>• Modernization as an Enterprise Solution</li><li>• Project Status and Issues</li></ul>	As Requested	External Stakeholders		

## SFA Modernization Program Plan

Communication	Medium	Messages	Timing	Audience	Develop	Deliver
		<ul style="list-style-type: none"> <li>• Success Stories</li> <li>• Customer Benefits</li> <li>• General Contact Names/Support</li> <li>• Deployment Announcement</li> <li>• Modernization Summary Presentation</li> </ul>				
Modernization Program website	Intranet website	All messages	Varies by month see Messages.doc, worksheet "Summary"	All		
Various project deliverables	Project reports	<ul style="list-style-type: none"> <li>• Guidelines, Procedures, Standards</li> <li>• Deployment Announcement</li> <li>• Deployment Details</li> </ul>	Project Milestone Driven	Stakeholders		
Management Council Meetings	Presentations	All Messages (over time)	Weekly	Council Members		
"Project Status and Issues" E-mail	E-Mail/Memo	<ul style="list-style-type: none"> <li>• Project Status and Issues</li> </ul>	Monthly	Modernization Team, Internal Stakeholders		
"Roving Reporter"	Inside SFA Newsletter	<ul style="list-style-type: none"> <li>• Success Stories</li> <li>• Status</li> </ul>	As necessary	SFA		
Prototype demonstrations	May be planned stand alone or in conjunction	<ul style="list-style-type: none"> <li>• Workplace Impacts</li> <li>• Guidelines, Procedures and Standards</li> <li>• Training Opportunities</li> </ul>				

## SFA Modernization Program Plan

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Communication	Medium	Messages	Timing	Audience	Develop	Deliver
	with Announcements meetings, Open House Meetings, Staff Meetings, Site Visits	<ul style="list-style-type: none"> <li>• Opportunities for Involvement</li> </ul>				
Problem Management Open House Meeting	Open house presentations	<ul style="list-style-type: none"> <li>• Burning Platform</li> <li>• Modernization as an Enterprise Solution</li> <li>• Workplace Impacts</li> <li>• Project Status and Issues</li> <li>• Success Stories</li> <li>• Customer Benefits</li> <li>• Personal Benefits</li> <li>• Target Group Responsibilities for Transition</li> <li>• Guidelines, Procedures and Standards</li> <li>• General Contact Names/Support</li> <li>• Training Opportunities</li> <li>• Opportunities for Involvement</li> <li>• Deployment Announcement</li> <li>• Deployment Details</li> <li>• Modernization Summary Presentation</li> </ul>				
“Prepare for Transition” E-	E-Mail/Memo	<ul style="list-style-type: none"> <li>• General Contact Names/Support</li> <li>• Responsibilities for Transition</li> </ul>				

## SFA Modernization Program Plan

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Communication	Medium	Messages	Timing	Audience	Develop	Deliver
mail		<ul style="list-style-type: none"> <li>• Deployment Announcement</li> </ul>				
Deployment Teaser Banners	Banner	<ul style="list-style-type: none"> <li>• Deployment Announcement</li> </ul>				
Breakfast with COO	Executive breakfast w/ Directors and Managers	<ul style="list-style-type: none"> <li>• Burning Platform</li> <li>• Modernization as an Enterprise Solution</li> <li>• Past PM efforts</li> <li>• Workplace Impacts</li> <li>• Success Stories</li> <li>• Customer Benefits</li> <li>• Organizational Benefits</li> </ul>	Nov.	Unit Managers, Stakeholders	R. Hermann	Walker
Regional Newsletter Articles	Regional Newsletters	<ul style="list-style-type: none"> <li>• Burning Platform</li> <li>• Modernization as an Enterprise Solution</li> <li>• Workplace Impacts</li> <li>• Project Status and Issues</li> <li>• Success Stories</li> <li>• Customer Benefits</li> <li>• Personal Benefits</li> <li>• Target Group Responsibilities for Transition</li> <li>• Guidelines, Procedures and Standards</li> <li>• General Contact Names/Support</li> <li>• Training Opportunities</li> <li>• Opportunities for Involvement</li> <li>• Deployment Announcement</li> <li>• Deployment Details</li> <li>• Modernization Summary</li> </ul>		All at Regional Offices		



## SFA Modernization Program Plan

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Communication	Medium	Messages	Timing	Audience	Develop	Deliver
		Presentation				

### 4.0 Investment Management

The Modernization Partner will perform in an advisory role to the SFA Investment Review Board (IRB) and Decision Support Group (DSG). The Modernization Partner team will provide continued support for maturing the Technology Investment Management Process. The team will provide standards for business case creation by projects so an accurate estimate of the expected value of these initiatives can be created by project sponsors. The team will also provide project analysis support by reviewing business case materials prior to submission to an IRB decision meeting.

The Modernization Partner team will provide periodic measurement and reporting of projects to determine if project investments are achieving the expected benefit levels for the project and at the program level. The outcome of this area will be improved decision making on project budget requests, projects more focused on delivering to the performance objectives, and better management understanding of the potential value of projects.

The implementation of the Investment Management Plan will provide a method to support the IT Investment Management Process. The plan is designed to ensure that investments in new projects and capabilities at SFA are aligned with SFA strategy; result in real, tangible benefits; conform to technical architecture; utilize an executable programmatic approach; and use commercial best practices.

This plan focuses on the following Investment Management processes:

- Submitting Funding Requests,
- Analyzing Strategic Alignment,
- Developing Business Case,
- Reviewing Business Case and Developing Recommendations,
- IRB Reviews,
- Establishing Integrated Product Teams, and
- Periodic Reviews.

#### 4.1 Channel Process for Modernization

The channel/IRB process for modernization is an internal and informal process for business area ideas to be reviewed before submitting a funding request to the IRB.

##### 4.1.1 Contribution to the Business Objectives Summary

Channel General Managers constantly receive ideas for improvements to their business areas from managers, employees, legacy contractors, and external sources. The channel manager will develop informal Integrated Product Teams (IPTs), made up of employees, legacy contractors, modernization partner team members, and external resources. The IPT is responsible for

providing a summary of the contribution to the business objectives. This summary includes cost, resource requirements, time frame, current problem resolutions, enhancements, etc.

### **4.1.2 Project Prioritization**

The IPT will submit a contribution to the business objectives summary to the channel manager and team. The team will review and prioritize the project requests for IRB funding. Key inputs to the decision making process include the SFA five year plan, business area strategic plans, and the Blueprint.

### **4.1.3 Submit Funding Request**

If the project request and contribution to the business objectives summary prove to be a good match with the business area and SFA strategic plans, the project is submitted to the IRB as a funding request.

## **4.2 IT/IRB Process for Modernization**

The IT/IRB process for modernization is a formal process for Channel General Managers to submit funding requests to the IRB.

### **4.2.1 Submit Funding Request**

The Modernization Partner will participate in the funding request development process. Funding requests will be developed by members of the affected SFA business area (i.e., the channels or the CIO/CFO) with the assistance of the business area's Modernization Partner representative. Funding requests are submitted using the IT Initiative Funding Request form. The form should be completely filled out and given to the Decision Support Group (DSG) for entry into the IRB Funding Request Database. Currently, this form is paper-based. In the future, the Modernization Partner will work to automate this process.

### **4.2.2 Analyze Strategic Alignment**

Funding requests for amounts over \$250,000 or for amounts over \$50,000 that affect one of the four strategic architecture areas (Internet, Call Centers, Data Warehousing, and Integration Architecture) and that impact multiple channels, organizational entities, and/or have other project interdependencies will be evaluated by DSG to ensure they are aligned with SFA strategy and meet the following criteria:

- Alignment with SFA strategic goals and business objectives;
- Delivery of tangible benefits;
- Conformance to existing technical architecture or planned enhancement to Blueprint architecture;
- Executable programmatic approach that provides business value; and
- Use of commercial best practices.

Individual projects over \$250,000 that align with the SFA strategy and meet the established criteria will be forwarded to the Develop Business Case process. Those that do not will be returned to the initiator with explanation.

Projects that are over \$50,000 and also impact multiple channels, organizational entities, and other projects and are aligned with the SFA Strategy and meet the established criteria, may be consolidated with other new or existing projects aimed at delivering a cross organizational solution and taking advantage of synergies and economies of scale. Consolidation of projects will be decided by the Decision Support Group. These projects, in turn will be forwarded to the Develop Business Case process.

### **4.2.3 Develop Business Case**

The Modernization Partner, SFA representative, and legacy contractor will work together to develop appropriate business case materials. The Modernization Partner will initially supply one representative for each channel to serve as an analyst. Projects that align with SFA strategy and meet the established criteria will receive funding for the development of the detailed business case. This business case will include:

- Economic benefits analysis including detailed analysis of SFA cost driver impacts and annualized cost savings over next five fiscal years; This analysis will include the calculation of an overall score which will be a combination of benefits and costs. This score will be developed later as the IRB process matures.
- Explanation of use of commercial best practice and use of COTS in proposed solution;
- Timetable for development/implementation which outlines milestones and key deliverables
- Cost estimate including detailed analysis of development and operating costs over next five fiscal years;
- Detailed description of top risks to project success and identification of mitigating circumstances for each risk with timetable for each mitigating circumstance; and
- Analysis of ease of implementation including assessment of organization and cultures ability to change and readiness for change.

The Modernization Partner will enhance the business case templates with SFA approval. The templates will include the following information:

- Project concept idea/definition,
- Sponsor,
- Scope of Concept Effort,
- Cost (i.e. NPV, IRR, ROI),
- Estimated Start Date,
- Estimated Completion Date,
- Participant Areas (Channels, CIO Office, CFO Office), and

- Risks and dependencies

The Modernization Partner team will establish a benefits baseline/metrics with SFA approval. This measurement tool will be effective in quantifying financial benefits and scoring customer and employee satisfaction benefits. The Modernization Partner team will support the maintenance and culture change associated with the matrix. Benefits metrics computation should be a part of day to day work at SFA.

The Modernization Partner team will provide an architecture check to confirm strategic alignment during the business case development process. In doing so, the Enterprise Architecture team will incorporate a “Pass/Fail” approach to inform the DSG of an impacts on the technical architecture.

#### **4.2.4 Review Business Case/Develop Recommendation**

Once the business case is submitted to DSG, the project will be evaluated by DSG to develop a recommendation to the IRB based upon the established criteria. The Modernization Partner team will assist DSG as process facilitators and coordinate the effort. All projects will be forwarded to the IRB if they are either supported or not-supported along with an explanation of the recommendation. The recommendation will include a rating and ranking utilizing the scores determined in the business case and modified by the DSG around strategic alignment and established criteria. Business cases that do not include adequate information to form a recommendation will be returned to the initiator.

#### **4.2.5 IRB Review**

The IRB will make the final decision on project approval and funding based upon the input received from DSG. Key check points will be established for project control and review.

#### **4.2.6 Establish Integrated Product Teams**

Integrated Product Teams (IPT) will be constituted for approved projects. The SFA Business Channel appoints a channel IPT leader and IPT members.

Working with the Modernization Partner, the IPT will define the requirements for a statement of work (SOW), award the task, initiate the project, execute the project, and manage the project through to completion.

#### **4.2.7 Periodic Review**

The Modernization Partner and the IPT will manage the execution of the project and will monitor status throughout the project. Periodic reviews will be conducted with the Modernization Partner and the project sponsor (Channels, CIO, CFO, etc.) to ensure projects are delivering results. See Attachment 1I for key checkpoints in the Systems Development Lifecycle.

### **4.2.8 Training**

The Modernization Partner team will develop training sessions on investment concepts and analysis as information sessions for the appropriate SFA personnel. Subsequent training sessions will be held on the new SFA templates, baseline, etc.

### **4.3 Investment Management Templates**

This is the current version of the Business Case. It is evolving as the process matures. This template can be found in Appendix 4A.

### 5.0 Performance Management

Effective Performance Management is key to achieving the overall objectives of the SFA Modernization effort. The objective of the Performance Management effort is to provide analytical data to enable SFA Management to make informed decisions regarding the various individual Modernization initiatives and indeed, the entire Modernization effort as a whole. These Performance Management processes will help ensure that the Modernization effort remains focused on its overall goals of improving services, reducing costs, and improving customer and employee satisfaction. In addition, the Performance Management processes will help ensure that performance gaps are identified in a timely manner and that effective corrective actions can be taken.

There are two primary components of Performance Management within the SFA Modernization Program:

- Tracking the progress and value associated with individual projects within the Modernization Program and
- Tracking OSFA's progress towards achieving the goals outlined in the OSFA's periodic Performance Plans for Student Financial Assistance.

Numerous sections of this document describe the processes and techniques to help verify that the individual projects of the Modernization effort achieve their intended objectives. Therefore, these processes and techniques will not be described in this section of the document. In particular, Sections *1.2 Project Management Requirements and Standards*, *2.0 Quality Plan*, and *4.0 Investment Management* provide details concerning the processes that will help ensure that the progress and value of individual projects meets or exceeds expectations. Please refer to these sections to gain additional insight into how individual projects will have their performance measured and reported and how corrective actions will be identified.

This following sections focus on the processes associated with the second component of the Performance Management function. This second component - tracking OSFA's progress towards achieving the goals outlined in its current Performance Plan for Student Financial Assistance (FY2000 – FY2004) – reflects a higher level Performance Management function. This function can be thought of as the more strategic aspect of Performance Management versus the tracking of individual projects which can be considered the more tactical aspect.

### 5.1 Objectives and Organization

The SFA Modernization Program seeks performance improvements that will allow OSFA to better serve its customers (students, schools, and financial institutions). These performance improvements will result in measurable progress that can be clearly determined and clearly communicated. The most current goals and approach for performance management for SFA are clearly and concisely described in the Draft Performance Plan for Student Financial Assistance FY2000 - FY2004. The goals outlined in the SFA Performance Plan are to:

- Reduce Unit Cost by 11% by FY2004
- Increase Customer Satisfaction Equal to Service Industry in 3 years
- Increase SFA Employee Satisfaction to Rank in the Top 5 of all Federal Agencies

The purpose of this section is to provide information on how the Modernization Partner will work with OSFA's Analysis Group and other appropriate parties to help achieve and measure OSFA's performance improvements.

A successful Performance Management effort requires that the Modernization Partner and Analysis Group work closely together to lead and guide the various activities and participants. This approach will allow the experiences and expertise already resident within SFA to be combined with the expertise and resources of the Modernization Partner (e.g. industry benchmarks, best practices, etc.). It is far better to utilize processes in place today rather attempting to "reinvent the wheel" unnecessarily.

Within the Modernization Partner organization, the oversight and coordination of the Performance Measures effort is the responsibility of the Program Management Office. The Program Management Office will work with Analysis Group for the definition and implementation of the Measurement activities and the consolidation, analysis and publication of these metrics on a periodic and on-going basis.

The Modernization Partner will help ensure that performance measures (also known as metrics) are collected and kept up to date using standard processes and tools. Program Management will be responsible for reviewing the metrics reports and providing feedback which can then be communicated via the usual channels to the program team.



### 5.2 Benefits of Metrics

Metrics are used to assess the collective status and progress of the projects and identify areas in which improvements can be made. This is important to SFA because well defined metrics will provide the following benefits:

- *Facilitate Predictability* - If appropriate metrics are used and collected accurately and consistently, they can predict the quality and productivity of the remaining work, the next development stage, the next release, the next project, etc.
- *Facilitate Continuous Improvement* - During the Modernization Program's efforts, one can review the metrics, determine the problems, and improve the process or the estimating guidelines. Improvements can occur from development stage to development stage, release to release, and project to project.

It is important to note that high level metrics should not be used for trying to evaluate either a project team or an individual, as they are primarily designed to measure the state of overall progress towards OSFA's goals.

In addition, metrics may not provide sufficiently precise information to pinpoint the exact cause of a problem. To pinpoint such issues or problems, more detailed metrics will be used. Most of these metrics will be produced as part of the standard Program Management functions such as progress reporting and status reporting.

### 5.3 Performance Management Processes

Today, SFA Performance measurement and reporting are conducted in concert with updates to the Performance Management Plan. Currently, results are published every six months in the form of Interim Performance Results. The Modernization Partner will work with Analysis Group to develop a schedule for the capture and reporting of metrics to assess customer and employees satisfaction and unit cost performance.

The key steps to this process are: Performance Measures Baselineing, Data Collection and Verification, and Results Reporting.

#### 5.3.1 Performance Measures Baselineing

The first step will be to review the initial Performance Measures that have been documented in the SFA Performance Plan. This will facilitate the verification that the identified measures still reflect key concerns of SFA management. In addition, it will ensure that a documented description of how the metrics were calculated exists. The importance of baselineing the SFA metrics is to get an agreed upon set of measures that is documented and can be audited by outside

independent auditors. It is important to anchor these measurements so that future improvements, performance incentives and accomplishments can be evaluated relative to the baseline.

As part of the baselining process, it is important to consider how other performance measures are aligned with the overall performance measures outlined in the Performance Plan. For example, the performance measures for many of the Legacy Contractors do not measure unit costs, customer satisfaction and employee morale. The Modernization Partner's Partner Management team will review the existing legacy contracts and make recommendations on how these contracts can be realigned with the overall performance measures. The Program Office will coordinate with the Partner Management team regarding how contracts can be revised and the impact that such changes would have on the overall Performance Management approach.

### **5.3.2 Data Collection and Verification**

Proper data collection and verification requires close attention to detail and well defined procedures. Procedural misunderstandings or omissions tend to ripple across projects and tend to take a significant time to detect, correct and overcome. Moreover, the OSFA's metrics repository could be adversely affected if the data collection requirements must be changed, further complicating the recovery.

The approach to ensuring that the Data Collection and Verification will include:

- Creating unambiguous definitions of the data to be collected. Checklists and supplementary forms to define data requirements, and will be used to define data already being collected in order to provide a common reference point for existing data against required data.
- Using the checklists as the basis for creating organization-specific data reporting forms. Each data report form will have entries corresponding to the checklists.
- Prepare a data collection guide that instructs the data collectors how to use the data report forms. This guide will provide examples of filled out forms and include the definition checklists in the guide as background that data collectors can use to help answer their own questions. A glossary of terms and definitions, specifically, interpretations and translations from the checklists to the software process will also be included.
- Using existing mechanisms (configuration management, project management, time tracking, and problem tracking, systems) to obtain the required data. In addition, there maybe a need to modify or add software processes and administration processes to obtain the required data. Collection procedures need to be integrated into the software processes, and new processes and tools may be required in order to achieve this goal.

- Establish verification, validation, and audit control procedures for the reported data. Initially this activity will be time consuming, but as the data collection process matures, trust and confidence should be established in the data reported and so the effort required to perform this activity should decrease.
- Surveys are planned to be used to capture customer service satisfaction as well as employee satisfaction. The Modernization Partner in conjunction with other resources within OSFA (including independent contractors) to gather this measurement information.

### 5.3.2.1 Data Collection Processes

The aim of the Data Collection Process Guides is to provide instructions on how to collect measurement data using the Data Collection Forms. These forms will be developed with the key SFA groups to ensure that the measures properly reflect the criteria of SFA.

Documentation of the data collection process will help OSFA understand and implement the process and then to improve and sustain the process. Expectations, responsibilities, etc, will be included in the guide.

It is important that these guides:

- Provide a clear definition for each of the data items to be collected on the data collection and reporting forms. In addition, they should define who should collect the data, when and where it should be collected, and who should receive the completed form. Examples of the data collection forms in addition to checklists defining the data to be collected will also be included.
- Relate the collection process to the software development process and the overall process improvement effort.
- Explain how the measurement process in general works and how the data will be used, in order to communicate this to all the people impacted by the process. (Describing how measurements will be used may reduce some of the resistance to measurement by managers.)

### 5.3.2.2 Data Verification & Auditing Processes

Data verification (consistency and range checking) and audit control of reported data are essential to avoid erroneous data in the measurement database and gaps in the reported data. This is in the scope of the IV&V contractor to verify and audit the process.

Data should be reviewed on a periodic basis before being submitted into the metrics database. Data Collection Forms will be reviewed to ensure that they have been completed correctly and completely, to check for consistency and reasonableness, and to catch errors in arithmetic and spelling.

### **5.3.3 Results Reporting**

As mentioned previously, SFA Performance results are published every six months in the form of Interim Performance Results (reflects the performance for the first half of the fiscal year) and Final Performance Results. The Modernization Partner will work closely with Analysis Group to utilize the existing processes and techniques used to share Performance information with all interested parties within and outside of the Department of Education. Communication of these results will also be considered as a key component of the overall communications strategy for OSFA since the Performance Measures are very high profile information.

Performance results will also be shared with the members of the Modernization Program so that they remain focused on key performance areas and to help facilitate the correction of any identified issues or problems

## **5.4 Relationship to Capability Release Approach**

Improvements to the overall performance of OSFA will be facilitated by the delivery of business capabilities developed by the Modernization Program. The identification and sequencing of the delivery of these capabilities is under development and will be continuously refined throughout the duration of the Modernization Program. With each delivery of a business capability, there should be an associated improvement to OSFA's performance related to customer satisfaction, unit costs, and employee satisfaction.

### **6.0 Student Financial Assistance Support**

SFA Support identifies the processes for analysis, reporting, develop and distribute messages to personnel, and other SFA stakeholder groups. The Modernization Partner will provide management and administration support to the SFA for matters concerning the Modernization program. This work will consist of presentation development, message development, representation at conferences and meetings and supporting responses to external and internal inquiries regarding Modernization. The Modernization Partner will provide management and financial industry expertise to help develop “Concept Definition” ideas for SFA. The Modernization Partner will also provide IT Requirements management support to the Channel General Managers and the CFO office. These activities are outside of the activities included in the Program Management Office standard management processes. Tracking measures of requests and responses will be included in the monthly Program Status Reports.

#### **6.1 Identification of Needs**

The Modernization Partner in conjunction with the SFA will identify the those things in which the support of the Modernization Partner is needed.

#### **6.2 Action Plan**

The Action Plan addresses how the Modernization Partner will plan to provide management and administration support to the SFA for matters concerning the program. The Modernization Partner will put together an Action Plan for each support item concerning what needs to be done, who will do it , and when it is due. A critical step in this process is identifying the process in which to go about doing this because this drives the distribution channel and medium in identifying a plan in which to go about executing/developing these support items.

##### **6.2.1 Execute – Develop**

In developing the SFA Support, the Modernization Partner will develop the necessary items - presentation development, message development, representation at conferences and meetings and supporting responses to external and internal inquiries regarding Modernization. The Modernization Partner will also provide management and financial industry expertise to help develop “Concept Definition” ideas for SFA. The Modernization will also provide IT Requirements management support to the Channel General Managers and the CFO office.

#### **6.3 Deliver Support**

All developed material must be agreed upon by the Modernization Partner and the SFA. The Modernization Partner will deliver the developed material to the key sponsors and stakeholders prior to the due date.

### **6.4 Report Support**

Requests and responses will be reported to the SFA through monthly Program Status Reports. These Reports will be logged into a report template which will be used by the SFA to manage the inquiries of the reports.

## **Appendices**

## **Appendix 1A**



## **Appendix 1B**

## **Appendix 1C**

## **Appendix 1D**

## **Appendix 1E**

## **Appendix 1F**

## **Appendix 1G**

## **Appendix 1H**

## **Appendix 1I**



## **Appendix 2A**

## **Appendix 2B**

## **Appendix 2C**

## **Appendix 2D**

## **Appendix 4A**